

ILLUSTRATED HANDBOOKS OF ART HISTORY
OF ALL AGES

ARCHITECTURE
CLASSIC AND EARLY CHRISTIAN

BY PROFESSOR T. ROGER SMITH, F.R.I.B.A.

AND

JOHN SLATER, B. , F.R.I.B.A.

ILLUSTRATED HANDBOOKS
OF
ART HISTORY OF ALL AGES

Each Volume contains numerous Illustrations, and is strongly bound
for the use of Students. Price 5s

NOW READY

By PROFESSOR T. ROGER SMITH AND JOHN SLATER, B.A.
ARCHITECTURE CLASSIC and EARLY CHRISTIAN Com-
prising the Egyptian Assyrian Greek Roman Byzantine and Early Christian
Illustrated with upwards of 200 Engravings, including the Parthenon, the Erechtheum,
the Temple of Zeus at Olympia, the Colosseum, the Baths of Diocletian, &c.

By PROFESSOR T. ROGER SMITH AND EDWARD J. POYNTER, R.A.
ARCHITECTURE GOTHIC and RENAISSANCE Showing
the progress of Gothic Architecture in England, France, Germany, Italy and Spain,
and of Renaissance Architecture in the same Countries. Illustrated with more than
100 Engravings, including many of the principal Cathedrals, Churches, Palaces and
Domestic Buildings in England, and on the Continent.

By GEORGE REDFORD, F.R.C.S.

**SCULPTURE EGYPTIAN, ASSYRIAN, GREEK and RO-
MAN** With 160 Illustrations, including Examples of the Works of the most cele-
brated Greek Sculptors, a Map of Ancient Greece, and a Chronological List of Ancient
Sculptors and their Works.

By EDWARD J. POYNTER, R.A., AND PERCY R. HEAD, B.A.

PAINTING CLASSIC and ITALIAN Including Painting in Egypt,
Greece, Rome and Pompeii, the Renaissance in Italy, Schools of Florence, Siena,
Rome, Padua, Venice, Perugia, Ferrara, Parma, Naples and Bologna. Illustrated
with 80 Engravings of many of the finest Pictures of Italy.

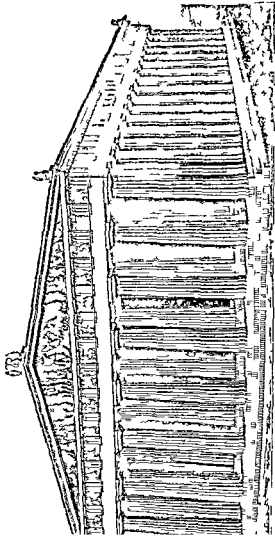
By H. J. WILMOT-BUXTON, M.A. AND EDWARD J. POYNTER, R.A.

PAINTING GERMAN, FLEMISH and DUTCH Including an
Account of the Works of Albrecht Dürer, Cranach, and Holbein, Van Eyck, Van der
Weyden, and Memling, Rubens, Snyder, and Van Dyck, Rembrandt, Hals, and
Jan Steen, Wynants, Ruisdael, and Hobbema; Cuyp, Potter, and Berchem, Pak-
huisen, Van de Velde, Van Huisum, and many other celebrated painters.

By H. J. WILMOT-BUXTON, M.A.

PAINTING ENGLISH and AMERICAN Including an account
of the Earliest Paintings known in England, the works of Holbein, Antonio Moro,
Lucas de Heere, Zuccaro, and Marc Gariard, the Hudsons and Olivers, Van Dyck,
Lely, and Kneller, Hogarth, Reynolds, and Gainsborough, West, Romney, and
Lawrence; Constable, Turner, and Wilkie, Macise, Mulready, and Landseer,
and many other celebrated painters.

Nearly ready



THE PART ENDS AT AT END AS IT WAS IN THE TIME OF PERICLES, C. 450 B.C. 439

ILLUSTRATED HANDBOOKS OF ART HISTORY

ARCHITECTURE

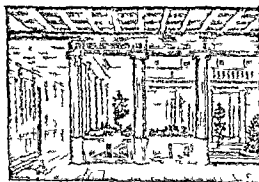
CLASSIC AND EARLY CHRISTIAN

BY T ROGLR SMITH FRIBA

Professor of Architecture University College London

AND

JOHN SLATER BA FRIBA



TEMPLE OF A ROMAN TEMPLE

LONDON
SON LOW, MARSTON SEARLE & RIVINGTON
CROWN BUILDINGS 188 FLEET STREET
1882

PREFACE.

THIS handbook is intended to give such an outline of the Architecture of the Ancient World, and of that of Christendom down to the period of the Crusades, as, without attempting to supply the minute information required by the professional student may give a general idea of the works of the great building nations of Antiquity and the Early Christian times. Its chief object has been to place information on the subject within the reach of those persons of literary or artistic education who desire to become in some degree acquainted with Architecture. All technicalities which could be dispensed with have been accordingly excluded, and when it has been unavoidable that a technical word or phrase should occur an explanation has been added either in the text or in the glossary, but as this volume and the companion one on Gothic and Renaissance Architecture are, in effect, two divisions of the same work, it has not been thought necessary to repeat in the glossary given with this part the words explained in that prefixed to the other.

In treating so very wide a field, it has been felt that the chief prominence should be given to that great sequence of architectural styles which form the links of a chain connecting the architecture of modern Europe with the earliest specimens of the art. Egypt, Assyria, and Persia combined to furnish the foundation upon which the splendid architecture of the Greeks was based.

Roman architecture was founded on Greek models with the addition of Etruscan construction and was for a time universally prevalent. The break up of the Roman Empire was followed by the appearance of the Basilican, the Byzantine and the Romanesque phases of Christian art and later on by the Saracenic. These are the styles in which all medieval and modern European architecture has been based and these accordingly have furnished the subjects to which the reader's attention is chiefly directed. Such styles as those of India, China and Japan, which lie quite outside this series, are noticed much more briefly and some matters—such for example as prehistoric architecture—which in a larger treatise it would have been desirable to include, have been entirely left out for want of room.

In treating each style the object has not been to mention every phase of its development still less every building but rather to describe the more prominent buildings with some approach to completeness. It is true that much is left unnoticed for which the student who wishes to pursue the subject further will have to refer to the writings specially devoted to the period or country. But it has been possible to describe a considerable number of typical examples and to do so in such a manner as it is hoped may make some impression on the reader's mind. Had not scores of a much greater number of buildings been compressed into the same space each must have been so condensed that the volume though useful as a catalogue for reference would have in all probability become uninteresting and consequently unserviceable to the class of readers for whom it is intended.

As far as possible mere matters of opinion have been excluded from this handbook. A few of the topics which it has been necessary to approach are subjects on which

high authorities still more or less disagree, and it has been impossible to avoid these in every instance, but as far as practicable, controverted points have been left untouched. Controversy is unsuited to the province of such a manual as this, in which it is quite sufficient for the authors to deal with the ascertained facts of the history which they have to unfold.

It is not proposed here to refer to the authorities for the various statements made in these pages but to this rule it is impossible to avoid making one exception. The writers feel bound to acknowledge how much they, in common with all students of the art, are indebted to the patient research, the profound learning, and the admirable skill in marshalling facts displayed by Mr Fergusson in his various writings. Had it been possible to devote a larger space to Eastern architecture Pagan and Mohammedan the indebtedness to him in a field where he stands all but alone, must of necessity have been still greater.

The earlier chapters of this volume were chiefly written by Mr Slater who very kindly consented to assist in the preparation of it but I am of course, as editor, jointly responsible with him for the contents. The Introduction, Chapters V to VII, and from Chapter X to the end, have been written by myself and if our work shall in any degree assist the reader to understand and stimulate him to admire, the architecture of the far-off past above all, if it enables him to appreciate our vast indebtedness to Greek art, and in a lesser degree to the art of other nations who have occupied the stage of the world, the aim which the writers have kept in view will not have been missed.

T. ROGER SMITH

University College, London
May 1882

FRIZE FROM CHURCH AT DESERDORF.

CONTENTS.

CHAPTER I

INTRODUCTION

PAGE
1

CHAPTER II

EGYPTIAN ARCHITECTURE.

Pyramids. Tombs. Temples. Analysis of Buildings . . 14

CHAPTER III

WEST ASIATIC ARCHITECTURE.

Babylonian. Assyrian. Persian. Analysis of Buildings . 43

CHAPTER IV.

ORIENTAL ARCHITECTURE.

Hindu. Chinese and Japanese 64

CHAPTER V.

GREEK ARCHITECTURE.

Buildings of the Doric Order 80

CHAPTER VI.

Buildings of the Ionic and Corinthian Orders. . . . 102

CHAPTER VII

GREEK ARCHITECTURE (continued)—

PAGE

Analysis of Greek Architecture The Plan The Walls The
 Roof The Openings. The Columns. The Ornaments
 Architectural Character

117

CHAPTER VIII.

ETRUSCAN AND ROMAN ARCHITECTURE.

Historical and General Sketch

138

CHAPTER IX.

The Buildings of the Romans. Basilicas. Theatres and
 Amphitheatres Baths (Thermae). Bridges and Aquo-
 ducts. Commemorative Monuments Domestic Archi-
 tecture

147

CHAPTER X

Analysis of Roman Architecture The Plan The Walls.
 The Roofs The Openings. The Columns. The Orna-
 ments. Architectural Character

182

CHAPTER XI

✓ LATELY CHRISTIAN ARCHITECTURE.

Basilicas in Rome and Italy

195

CHAPTER XII

✓ BYZANTINE ARCHITECTURE

210

CHAPTER XIII

✓ ROMANESQUE ARCHITECTURE

222

CHAPTER XIV

✓ CHRISTIAN ROUND-ARCHED ARCHITECTURE.

Analysis of Basilican, Byzantine and Romanesque

240

CHAPTER XV

✓ MOHAMMEDAN ARCHITECTURE.

Egypt Syria and Palestine Sicily and Spain, Persia and India

252

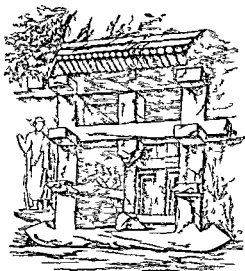
LIST OF ILLUSTRATIONS

	PAGE
THE PARTHENON AT ATHENS, AS IT WAS IN THE TIME OF PERICLES, c. 438 B.C.	<i>Frontispiece</i>
ATRIUM OF A ROMAN MANSION	(on t. l. c. page)
FRIEZE FROM CHURCH AT DENKENDORF	I
* ROCK-CUT TOMB AT MYRA IN LYCIA. IMITATION OF TIMBER CONSTRUCTION IN STONE	XVIII
THE TEMPLE OF VESTA AT TIVOLI	XXIV
1 OPENING SPANNED BY A LINTEL. ARCH OF THE GOLDSMITHS, ROME	3
2 OPENING SPANNED BY A SEMICIRCULAR ARCH. ROMAN TRIUMPHAL ARCH AT POLA	4
3 OPENINGS SPANNED BY POINTED ARCHES. INTERIOR OF ST FRONT, PERIGUEUX, FRANCE	5
4 TEMPLE OF ZEUS AT OLYMPIA. RESTORED ACCORDING TO ADLER	8
5 PART OF THE EXTERIOR OF THE COLOSSEUM. ROME	10
* 6. TIMBER ARCHITECTURE. CHURCH AT BORGUND	12
7 AN EGYPTIAN CORNICE	14
8 SECTION ACROSS THE GREAT PYRAMID (OF CHEOPS OR SAPHIS)	17
9 ASCENDING GALLERY IN THE GREAT PYRAMID	19
10 THE SEPULCHRAL CHAMBER IN THE PYRAMID OF CEPHEUS AT GIZAH	19
11 THE CONSTRUCTION OF THE KING'S CHAMBER IN THE GREAT PYRAMID	19
, 12 IMITATION OF TIMBER CONSTRUCTION IN STONE FROM A TOMB AT MEMPHIS	21
• 13 IMITATION OF TIMBER CONSTRUCTION IN STONE, FROM A TOMB AT MEMPHIS	21
14 PLAN AND SECTION OF THE TOMB AT BENI HASSEN	23
15 ROCK-CUT FAÇADE OF THE TOMB AT BENI HASSEN	24
16 GROUND-PLAN OF THE TEMPLE AT KARNAK	6
17 THE HYPOSTYLE HALL AT KARNAK, SHOWING THE CLERESTORY	27
18 ENTRANCE TO AN EGYPTIAN TEMPLE, SHOWING THE PYLONS	27

	PAGE
19 PLAN OF THE TEMPLE AT EDFOU	20
20 EXAMPLE OF ONE OF THE MAMMISI AT EDFOU	30
21 GROUND PLAN OF THE ROCK-CUT TEMPLE AT ISMAMBOLI	31
22 SECTION OF THE ROCK-CUT TEMPLE AT ISMAMBOLI	31
23 EGYPTIAN COLUMN WITH LOTUS BUD CAPITAL	37
24 EGYPTIAN COLUMN WITH LOTUS FLOWER CAPITAL	37
25 PALM CAPITAL	31
26 SCULPTURED CAPITAL	31
27 ISIS CAPITAL FROM DENDERAH	35
28 FANCIFUL COLUMN FROM PAINTED DECORATION AT THEBES	35
29 CROWNING CORNICE AND BEAD	36
30 PAINTED DECORATION FROM THEBES	42
31 SCULPTURED ORNAMENT AT NINEVEH	43
32 PALACE AT KHORSABAD BUILT BY KING SARGON ABOUT 710 B.C.	48
33 PAVEMENT FROM BUOYUNKIK	51
34 PROTO IONIC COLUMN FROM ASSYRIAN SCULPTURE	53
34A PROTO-IONIC CAPITAL FROM ASSYRIAN SCULPTURE	53
34B PROTO-CORINTHIAN CAPITAL FROM ASSYRIAN SCULPTURE	53
35 TOMB OF CYRUS	54
35A GENERAL PLAN OF THE BUILDINGS AT PERSEPOLIS	56
35B COLUMN FROM PERSEPOLIS—EAST AND WEST PORTICOES	58
36 COLUMN FROM PERSEPOLIS—NORTH PORTICO	58
37 THE ROCK CUT TOMB OF DARIUS	60
38 SCULPTURED ORNAMENT AT ALLAHABAD	64
39 DIAPYCNIA FROM CEYLON	66
40 CHATTYA NEAR POONA	68
41 THE KYLAS AT ELLORA A ROCK-CUT MONUMENT	69
42 PLAN OF THE KYLAS AT ELLORA	70
43 VIMANA FROM MANASARA	71
44 BRACKET CAPITAL	71
45 COLUMN FROM AJANTA	73
46 COLUMN FROM ELLORA	73
47 COLUMN FROM AJANTA	73
48 A SMALL PAGODA	73
49 GREEK MONSTROUS ORNAMENT	76
50 PLAN OF A SMALL GREEK TEMPLE IN ANTIS	80
50A PLAN OF A SMALL GREEK TEMPLE	82
51 ANCIENT GREEK WALL OF UNWROUGHT STONE FROM SAMO- THRAE	83

	PAGE
11 THE PANTHEON INTERIOR	163
128 THE CORINTHIAN ORDER FROM THE PANTHEON	169
139 THE ARCH OF CONSTANTINE, ROME	170
140 GROUND-PLAN OF THE HOUSE OF PAMPHILUS AT POMPEII	170
141 GROUND-PLAN OF THE HOUSE OF THE TRAGIC POET POMPEII	171
142 THE ATRIUM OF A POMPEIAN HOUSE	171
143 WALL DECORATION FROM POMPEII	180
144 CARVING FROM THE FORUM OF NERVA, ROME	180
145 ROMAN CORINTHIAN CAPITAL AND BASE FROM THE TEMPLE OF VESTA AT TIVOLI	180
145a. A ROMAN COMPOSITE CAPITAL	180
146 PART OF THE THEATRE OF MARCELLUS, ROME. SHOWING THE COMBINATION OF COLUMN AND ARCHED OPENINGS	190
147 FROM THE RUINS OF THE FORUM OF NERVA, ROME. SHOWING THE USE OF AN ATTIC STORY	191
148 FROM THE BATHS OF DIOCLETIAN ROME. SHOWING A FRAGMENTARY ENTABLATURE AT THE STARTING OF PART OF A VAULT	192
149 FROM THE PALACE OF DIOCLETIAN SPALATO SHOWING AN ARCH SPRINGING FROM A COLUMN	192
150 MOULDINGS AND ORNAMENTS FROM VARIOUS ROMAN BUILDINGS	193
151 ROMAN CARVING AN ACANTHUS LEAF	194
152 THE EGG AND DART ENRICHMENT ROMAN	194
153 WALL DECORATION OF (SO-CALLED) ARABESQUE CHARACTER FROM POMPEII	195
154 DECORATION IN RELIEF AND COLOUR OF THE VAULT OF A TOMB IN THE VIA LATINA NEAR ROME	197
155 BASILICA CHURCH OF SAN MINIATO, FLORENCE	198
156 INTERIOR OF A BASILICA AT POMPEII RESTORED FROM DESCRIPTIONS BY VARIOUS AUTHORS	200
156a. BASILICA, OR EARLY CHRISTIAN CHURCH, OF SANT' AGNESE	

	PAGE
162 PLAN OF ST MARK'S AT VENICE	217
163 SCULPTURED ORNAMENT FROM THE GOLDEN DOOR OF JERUSALEM	217
164 CHURCH AT TIRMIDIAN IN SYRIA	220
165 TOWER OF A RUSSIAN CHURCH	221
166 TOWER OF FAIRFAX BARTON CHURCH	223
167 CATHEDRAL AT PIACENZA	223
168 VALLIS OF THE EXCAVATED ROMAN BATHS IN THE MUSEE DE CLUNY PARIS	227
169 CHURCH OF ST SERVIN TOULOUSE	228
170 NAVE ARCADE AT ST SERVIN TOULOUSE	229
171 AISLES IN RECEDING PLANES AT ST SERVIN TOULOUSE	230
172 NORMAN ARCHES IN ST PETER'S CHURCH, NORTHAMPTON	231
173 NAVE ARCADE, PETERBOROUGH CATHEDRAL	236
174 DECORATIVE ARCADE FROM CANTERBURY CATHEDRAL	237
175 HEDINGHAM CASTLE	238
176 INTERIOR OF HEDINGHAM CASTLE	239
177 ROUNDED ARCH OF CHURCH AT GILNHALSEN	240
178 PLAN OF THE CHURCH OF THE APOSTLES AT COLOGNE	241
179 SPIRE OF SPIRES CATHEDRAL	242
180 CHURCH AT POSSEIM UPPER PORTION OF FACADE	244
181 CUBIC CAPITAL	246
182 DOORWAY AT TIND, NORWAY	247
183 MOULDINGS OF PORTAL OF ST JAMES'S CHURCH AT HOUSTON	248
184 BYZANTINE BASKET WORK CAPITAL FROM SAN MICHELE IN AFFRICISCO AT PAVENNA	251
185 ARABIAN CAPITAL FROM THE ALHAMBRA	252
186 HORSE SHOE ARCH	254
187 EXTERIOR OF SANTA SOFIA CONSTANTINOPLE SHOWING THE MINARETS ADDED AFTER ITS CONVERSION INTO A MOSQUE	255
188 ALHAMBRA HALL OF THE ABNACLERHAGES	257
189 MOSQUE "EL MOYED" AT CAIRO	259
190 ARABIAN WALL DECORATION	260
191 PLAN OF THE SAHRA MOSQUE AT JERUSALEM	261
192 SECTION OF THE SAHRA MOSQUE AT JERUSALEM	262
193 DOORWAY IN THE ALHAMBRA	264
194 GRAND MOSQUE AT DYLIK BUILT BY NISAR IGHAN	267
195 ENTRANCE TO A MOORISH HAZARD	269



ROCK-CUT TOMB AT MIRA IN LYCIA.
Imitation of Timber Construction in Stone.

GLOSSARY.



- ABACUS, a square tablet which crowns the capital of the column
- ACANTHUS a plant the foliage of which was imitated in the ornament of the Corinthian capital
- AGORA the place of general assembly in a Greek city
- ALAE (*Lat* wings) recesses opening out of the atrium of a Roman house
- ALHAMBRA the palatial fortress of Granada (from *al Hamra*—the red)
- AMBO a sitting of early Christian churches very similar to a pulpit
- AMPHITHEATRE, a Roman place of public entertainment in which combats of gladiators, &c. were exhibited.
- ANTÆ narrow piers used in connection with columns in Greek architecture for the same purpose as pilasters in Roman
- ARABESQUE, a style of very light ornamental decoration
- ARCHAIC primitive so ancient as to be rude or at least extremely simple
- ARCHIVOLT the series of mouldings which is carried round an arch
- ARENA the space in the centre of an amphitheatre where the combats took place
- ARRIS, a sharp edge
- ASTRACAL, a small round moulding
- ATRIUM the main quadrangle in a Roman dwelling house also the enclosed court in front of an early Christian basilican church
- BAPTISTERY, a building or addition to a building erected for the purposes of celebrating the rite of Christian baptism
- BASEMENT the lowest story of a building applied also to the lowest part of an architectural design.
- BAS-RELIEF, a piece of sculpture in low relief
- BELL & BELL, a moulding in Greek architecture used in the capitals of Antæ

ENTASA, in the shaft of a column, a curved outline.

EPHLEBUM, the large hall in Roman baths in which youths practised gymnastic exercises.

FACTA, in Classic architecture, a narrow flat band or face.

FACUS, the passage from the atrium to the peristyle in a Roman house.

FLUTLS, the small channels which run from top to bottom of the shaft of most columns in Classic architecture.

FORUM, the place of general assembly in a Roman city, as the Agora was in a Greek.

Fresco, painting executed upon a plastered wall while the plaster is still wet.

FRET, an ornament made up of squares and L-shaped lines, in use in Greek architecture.

GARTH, the central space round which a cloister is carried.

GIRDER, a beam.

GROUTED, sand of masonry or brickwork, treated with liquid mortar to fill up all crevices and interstices.

GUTTÆ, small pendent features in Greek and Roman Doric cornices, resembling rows of wooden pegs.

HEXASTYLE, of six columns.

HONEYSUCKLE ORNAMENT, a decoration constantly introduced into Assyrian and Greek architecture, founded upon the flower of the honeysuckle.

HORSESHOE ARCH, an arch more than a semicircle, and so wider above than at its springing.

HYPOTYLE, literally "under columns," but used to mean filled by columns.

IMPLEVUM, the space into which the rain fell in the centre of the atrium of a Roman house.

INSELA, a block of building surrounded on all sides by streets, literally an island.

INTERCOLUMNATION, the space between two columns.

KEYED, secured closely by interlocking.

KIBLA, the most sacred part of a Mohammedan mosque.

LATS, in Indian architecture, Buddhist inscribed pillars.

MAKHT: small Egyptian temple.

MASTABA, the most usual form of Egyptian tomb.

MAUSOLEUM a magnificent sepulchral monument or tomb. From the tomb erected to Mausolus, by his wife Artemisia, at Halicarnassus, 379 B.C.

MEIOPES literally faces, the square spaces between triglyphs in Doric architecture occasionally applied to the sculptures fitted into these spaces.

MINARET a slender lofty tower a usual appendage of a Mohammedan mosque.

MOSOLITH, of one stone.

MORTISE, a hollow in a stone or timber to receive a corresponding projection.

MOSQUE, a Mohammedan place of worship.

MUTULE, a feature in a Classic Doric cornice, somewhat resembling the end of a timber beam.

NARTHEX in an early Christian church the space next the entrance

OBELISK a tapering stone pillar a feature of Egyptian architecture.

OPUS ALEXANDRINUM, the mosaic work used for floors in Byzantine and Romanesque churches.

OVOLO, a moulding the profile of which resembles the outline of an egg used in Classic architecture.

PROTHYRUM, in a Roman house, the porch or entrance
PSEUDO-PERISTERAL, resembling, but not really being peristylar
PYLON, or **PRO-PYLON**, the portal or front of an Egyptian temple

QUADRIGA, a four horse chariot.

ROMANESQUE, the style of Christian architecture which was founded on Roman work.

ROTUNDA, a building circular in plan

SACRISTY, the part of a church where the treasures belonging to the church are preserved

SHINTO TEMPLES, temples (in Japan) devoted to the Shinto religion

SIAN, the space over which an arch or a roof extends.

SPINA, the central wall of a Roman racecourse

STILTED, raised, usually applied to an arch when its centre is above the top of the jambs from which it springs.

STRUTS, props.

STUPE, in Indian architecture a mound or torse

STYLOBATE, a series of steps, usually those leading up to a Classic temple.

TAAE, a pagoda

TABLINUM, in a Roman house, the room between the atrium and the peristyle

TALAR, in Assyrian architecture, an open upper story

TENONED, fastened with a projection or tenon

TESSELATED, made of small squares of material, applied to coarse mosaic work

TETRASTYLE, with four columns.

THERME, the great bathing establishments of the Romans.

TOPES, in Indian architecture, artificial mounds.

TRABEATED, constructed with a beam or beams, a term usually employed in contrast to arches.

TRICLINIUM, in a Roman house, the dining room

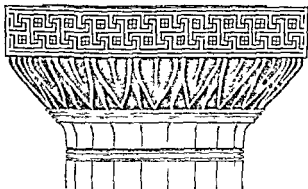
TRIGLYPH, the channelled feature in the frieze of the Doric order

TUMULI, mounds, usually sepulchral

TYPHONIA, small Egyptian temples

VLARUM a great awning

VESTIBUL, the outer hall or ante room



ANCIENT ARCHITECTURE

CHAPTER I

INTRODUCTION

ARCHITECTURE may be described as building at its best, and when we talk of the architecture of any city or country we mean its best noblest, or most beautiful buildings, and we imply by the use of the word that these buildings possess merits which entitle them to rank as works of art.

The architecture of the civilised world can be best understood by considering the great buildings of each important nation separately. The features, ornaments, and even forms of ancient buildings differed just as the speech or at any rate the literature, differed. Each nation wrote in a different language, though the books may have been

whether the column survives long after the exclusive use of the beam has been superseded and the truss

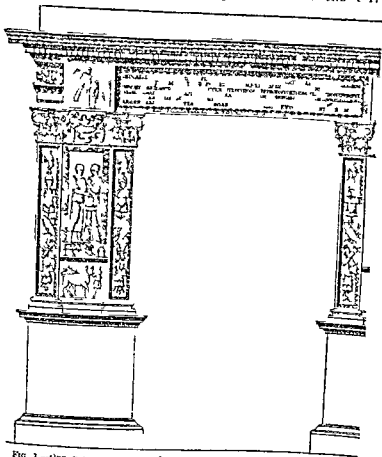
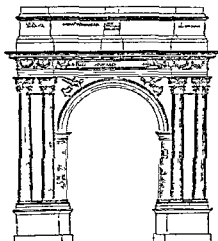


FIG 1—OPENING A BY A L EL AR OF THE O SMITH LOMB

columnar must accordingly be shared with buildings forming part of the succeeding series

- ② The second great group of buildings is that in which the semicircular arch is introduced into construction and

used either together with the beam or as mostly happened instead of the beam to span the openings (Fig 2) This use of the arch began with the Assyrians and it reappeared in the works of the early Etruscans The round arched series of styles embraces the buildings of the Romans from their earliest beginnings to their decay it also includes the two great schools of Christian architec



- ③ The third group of buildings is that in which the pointed arch is employed instead of the semi-circular arch to span the openings (Fig. 3). It began with the rise of

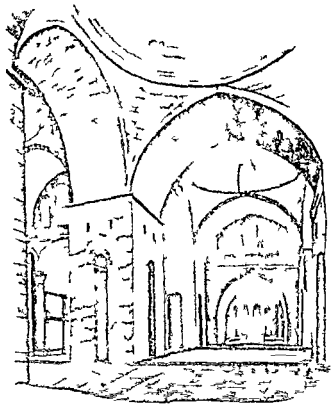


FIG. 3.—OPENING SPANNED BY POINTED ARCH. INTERIOR OF ST. FRONT
EVEUX, FRANCE.

Mohammedan architecture in the East and embraces all the buildings of Western Europe from the time of the First Crusade to the revival of art in the fifteenth century.

us great series of buildings constitutes what is known
 limited or more commonly as Gothic architecture
 The fourth group consists of the buildings erected
 from or since the Renaissance (i.e. revival) period and
 marked by a return to the styles of past ages or distant
 countries for the architectural features and ornaments of
 buildings and by that luxury, complexity and ostenta-
 tion which with other qualities are well comprehended
 under the epithet Modern. This group of buildings
 runs what is known as Renaissance architecture and
 extends from the epoch of the revival of letters in the

ture, and the distinction thus drawn is one of a real, not of a fanciful nature.

Every building when reduced to its elements as will be done in both these volumes may be considered as made up of its (1) floor or plan (2) walls (3) roof (4) openings, (5) columns, and (6) ornaments, and is marked by its distinctive (7) character, and the student must be prepared to find that the openings are by no means the least important of these elements. In fact the moment the method of covering openings was changed it would be easy to show, did space permit, that all the other elements, except the ornaments were directly affected by the change, and the ornaments indirectly and we thus find such a correspondence between this index feature and the entire structure as renders this primary division a scientific though a very broad one. The contrast between the trabeated style and the arched style may be well understood by comparing the illustration of the Parthenon which forms our frontispiece, or that of the great temple of Zeus at Olympia (Fig 4) with the exterior of the Colosseum at Rome (Fig 5), introduced here for the purposes of this comparison.

A division of buildings into such great series as this cannot, however supersede the more obvious historical and geographical divisions. The architecture of every ancient country was partly the growth of the soil and adapted to the climate of the country, and the materials found there and partly the outcome of the national character of its inhabitants, and of such influences as race, colonisation, commerce, or conquest brought to bear upon them. These influences produced strong distinctions between the work of different peoples especially before the era of the Roman Empire. Since that

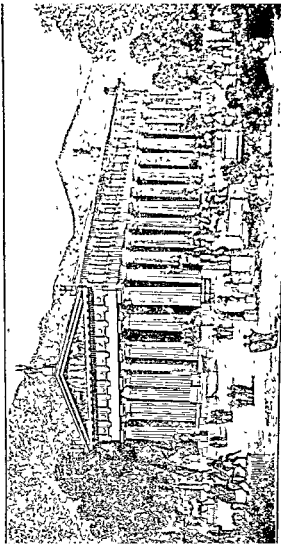


FIG. 6 - TEMPLE OF ZEUS AT OLYMPIA. RE-ERECTED ACCORDING TO AETNA.

period of universal dominion all buildings and styles have been influenced more or less by Roman art. We accordingly find the buildings of the most ancient nations separated from each other by strongly marked lines of demarcation but those since the era of the Empire show in a considerable resemblance to one another. The circumstance that the remains of those buildings only which received the greatest possible attention from their builders have come down to us from any remote antiquity has perhaps served to accentuate the differences between different styles for these foremost buildings were not intended to serve the same purpose in all countries. Nothing but tombs and temples have survived in Egypt. Palaces only have been rescued from the decay of Assyrian and Persian cities and temples theatres and places of public assembly are the chief almost the only remains of architecture in Greece.

A strong contrast between the buildings of different ancient nations rises also from the differing point of view for which they were designed. Thus in the tombs and, to a large extent the temples of the Egyptians we find structures chiefly planned for internal effect that is to say intended to be seen by those admitted to the sacred precincts but only to a limited extent appealing to the admiration of those outside. The buildings of the Greeks on the other hand were chiefly designed to please those who examined them from without and though no doubt some of them the theatres especially were from their very nature planned for interior effect by far the greatest works which Greek art produced were the exteriors of the temples.

The works of the Romans and following them those of almost all Western Christian nations were designed

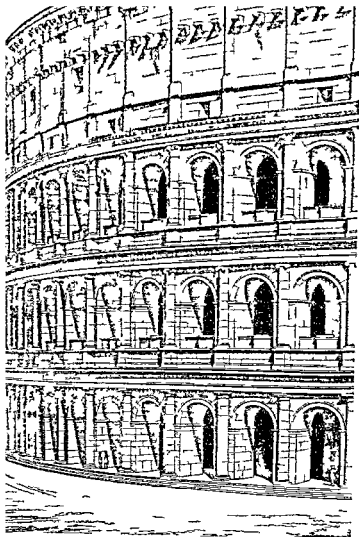
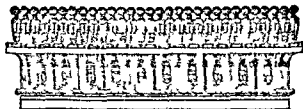


FIG. 5. PART OF THE EXTERIOR OF THE COLOSSEUM IN ROME. (NOW IN P. 128.)

to unite external and internal effect, but in many cases external was evidently most sought after and, in the North of Europe, many expedients—such, for example as towers, high pitched roofs and steeples—were introduced into architecture with the express intention of increasing external effect. On the other hand the Eastern styles, both Mohammedan and Christian, especially when practised in sunny climates, show in many cases a comparative disregard of external effect, and that their architects lavished most of their resources on the interiors of their buildings.

Passing allusions have been made to the influence of climate on architecture and the student whose attention has been once called to this subject will find many interesting traces of this influence in the designs of buildings erected in various countries. Where the power of the sun is great flat terraced roofs which help to keep buildings cool and thick walls are desirable. Sufficient light is admitted by small windows far apart. Overhanging eaves or horizontal cornices are in such a climate the most effective mode of obtaining architectural effect and accordingly in the styles of all Southern peoples these peculiarities appear. The architecture of Egypt for example exhibited them markedly. Where the sun is still powerful but not so extreme the terraced roof is generally replaced by a sloping roof steep enough to throw off water, and larger openings are made for light and air, but the horizontal cornice still remains the most appropriate means of gaining effects of light and shade. This description will apply to the architecture of Italy and Greece. When however, we pass to Northern countries where snow has to be encountered where light is precious and where the sun is low in the heavens for the

is the material obtainable, architecture has invariably been severe and simple, where soft stone is obtainable exuberance of ornament makes its appearance in consequence of the material lending itself readily to the carver's chisel. Where on the other hand marble is abundant and good refinement is to be met with for no other building material exists in which very delicate moldings or very slight or slender projections may be employed with the certainty that they will be effective. Where stone is scarce brick buildings with many arches roughly constructed cornices and pilasters, and other peculiarities both of structure and ornamentation make their appearance as, for example in Lombardy and North Germany. Where materials of many colours abound as is the case for example in the volcanic districts of France polychromy is sought as a means of ornamentation. Lastly where timber is available and stone and brick are both scarce the result is an architecture of which both the forms and the ornamentation are entirely dissimilar to those proper to buildings of stone marble or brick as may be seen by a glance at our illustration of an early Scandinavian church built of timber (Fig. 6) which presents forms appropriate to a timber building as being easily constructed of wood but which would hardly be suitable to any other material whatever.



F —LEVITAS Co. 577

CHAPTER II

EGYPTIAN ARCHITECTURE

THE origin of Egyptian architecture like that of Egyptian history is lost in the mists of antiquity. It remains of all or almost all other styles of architecture enable us to trace their rude beginnings their development their gradual progress up to a culminating point and thence their slow but certain decline. Yet the earliest remains of the constructions of the Egyptians show their skill as builders at the height of its perfection their archi-

Pyramids which appear to have been all designed as royal burying places. A large number of pyramids have been discovered, but those of Gizeh near Cairo are the largest and the best known and also probably the oldest which can be authenticated*. The three largest pyramids are those of Cheops, Cephren and Mycerinus at Gizeh (or as the names are more correctly written Sufhis, Senuphus and Moscheris or Mencheris). These monarchs all belonged to the fourth dynasty and the most probable date to be assigned to them is about 3000 B.C. The pyramid of Sufhis is the largest and is the one familiarly known as the Great Pyramid, it has a square base the side of which is 760 feet long, a height of 484 feet and an area of 577 600 square feet. In this pyramid the angle of inclination of the sloping sides to the base is $51^{\circ} 51'$.



FIG 9.—ASCENDING GALLERY IN THE GREAT PYRAMID

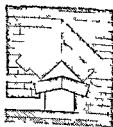


FIG 10.—THE SARCOPHAGUS CHAMBER IN THE PYRAMID OF CHEPHREN AT GIZA

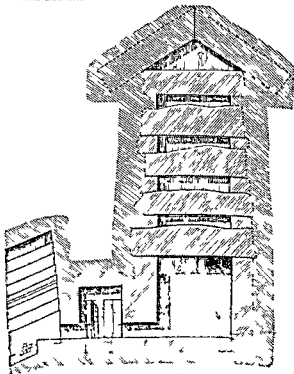


FIG 11.—THE CONSTRUCTION OF THE KING'S CHAMBER IN THE GREAT PYRAMID.

most beautiful mathematical accuracy. The chief interest attaching to the pyramids lies in their extreme antiquity and the scientific method of their construction, for their effect upon the spectator is by no means proportionate to their immense mass and the labour bestowed upon them.

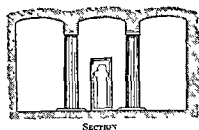
In the neighbourhood of the pyramids are found a large number of tombs which are supposed to be those of private persons. Their form is generally that of a *mastaba* or truncated pyramid with sloping walls and their construction is evidently copied from a fashion of wooden architecture previously existing. The same idea of making an everlasting habitation for the body prevailed as in the case of the pyramids and stone was therefore the material employed, but the builders seem to have desired to indulge in a decorative style and as they were totally unable to originate a legitimate stone architecture we find carved in stone rounded beams as lintels, grooved posts and—most curious of all—roofs that are an almost exact copy of the early timber huts when unsquared baulks of timber were laid across side by side to form a covering. Figs. 12 and 13 show this kind of stone-work which is peculiar to the old dynasties, and seems to have had little influence upon succeeding styles.

A remarkable feature of these early private tombs consists in the paintings with which the walls are decorated and which vividly portray the ordinary every-day occupations carried on during his lifetime by the person who was destined to be the inmate of the tomb. These paintings are of immense value in enabling us to form an accurate idea of the life of the people at this early age.

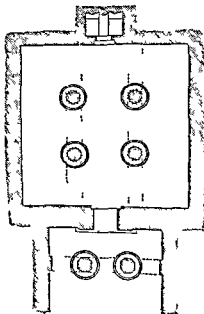
It may possibly be open to doubt whether the dignified appellation of architecture should be applied to buildings

of the kind we have just been describing; but when we come to the series of remains of the twelfth dynasty at Beni-Hassan, in middle Egypt, we meet with the earliest known examples of that most interesting feature of all subsequent styles—the column. Whether the idea of columnar architecture originated with the necessities of quarrying—square piers being left at intervals to support the superincumbent mass of rock as the quarry was gradually driven in—or whether the earliest stone piers were imitations of brickwork or of timber posts, we shall probably never be able to determine accurately, though the former supposition seems the more likely. We have here monuments of a date 1400 years anterior to the earliest known Greek examples, with splendid columns, both

the twelfth dynasty, and present few features of architectural interest, though they are remarkable for their vast extent and the variety of form of their various chambers and galleries. They consist of a series of chambers excavated in the rock and it appears certain that the tomb was commenced on the accession of each monarch and was driven farther and farther into the rock during the continuance of his reign till his death when all work abruptly ceased. All the chambers are profusely decorated with paintings but of a kind very different from those of the earlier dynasties. Instead of depicting scenes of ordinary life, all the paintings refer to the supposed life after death and are thus of very great value as a means of determining the religious opinions of the



SECTION

FIG. 14—PLAN AND SECTION OF THE TOMB
AT BENI HASSAN

Professor Donaldson at the Royal Institute of British Architects in 1861, but later Egyptologists rather incline to the belief that this was a tomb and not a temple, as in one of the chambers of the interior a number of compartments were discovered one above the other which were apparently intended for the reception of bodies. This singular building is close to the Great Sphinx, its plan is cruciform, and there are in the interior a number of rectangular piers of granite supporting very simple architraves, but there are no means of determining what kind of roof covered it in. The walls seem to have been faced on the interior with polished slabs of granite or alabaster, but no sculpture or hieroglyphic inscriptions were found on them to explain the purpose of the building. Leaving this building—which is of a type quite unique—out of the question, Egyptian temples can be generally classed under two heads (1) the large principal temples and (2) the small subsidiary ones called *Typhonra* or *Mammisi*. Both kinds of temple vary little, if at all, in plan from the time of the twelfth dynasty down to the Roman dominion.

The large temples consist almost invariably of an entrance gate flanked on either side by a large mass of masonry, called a pylon, in the shape of a truncated pyramid (Fig 18). The axis of the ground plan of these pylons is frequently obliquely inclined to the axis of the plan of the temple itself, and indeed one of the most striking features of Egyptian temples is the lack of regularity and symmetry in their construction. The entrance gives access to a large courtyard generally ornamented with columns beyond this and occasionally approached by steps is another court, smaller than the first, but much more splendidly adorned with columns and colossi, beyond this

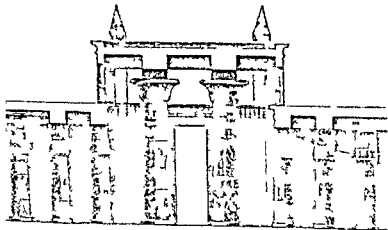


FIG 17.—THE HYPOSTYLE HALL AT K. RNAK & OWING THE CLEISTORY

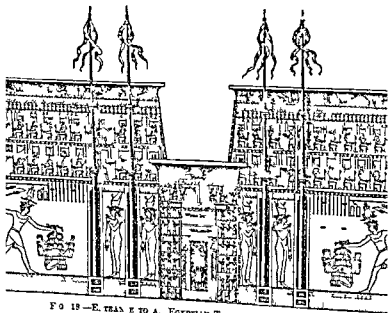


FIG 18.—E. TRANSEPT TO A. EGYPTIAN TEMPLE, & OWING THE PYLONS

of gallery, C, in which were two gigantic obelisks, D, another grand hall, is called the Hall of the Caryatides, and beyond is the Hall of the eighteen columns through which access is gained to a number of smaller halls grouped round the central chamber F. Beyond this is a large courtyard, in the centre of which stood the original sanctuary, which has disappeared down to its foundations, nothing but some broken shafts of columns remaining. At the extreme east is another hall supported partly by columns and partly by square piers, and a second series of pillared courts and chambers. The pylons and buildings generally decrease in height as we proceed from the entrance eastwards. This is due to the fact that the building grew by successive additions each one more magnificent than the last, all being added on the side from which the temple was entered leaving the original sanctuary unchanged and undisturbed.

Besides the buildings shown on the plan there were many other temples to the north, south, and east entered by pylons and some of them connected together by avenues of sphinxes, obelisks, and colossi, which altogether made up the most wonderful agglomeration of buildings that can be conceived. It must not be imagined that this temple of Karnak, together with the series of connected temples is the result, of one clearly conceived plan, on the contrary, just as has been frequently the case with our own cathedrals and baronial halls, alterations were made here and additions there by successive kings one after the other without much regard to connection or congruity the only feeling that probably influenced them being that of emulation to excel in size and grandeur the erections of their predecessors, as the largest buildings are almost always of latest date. The original sanctuary

chambers and surrounded on all sides by a colonnade composed of circular columns or square piers placed at intervals and the whole is roofed in. A dwarf wall is fre-

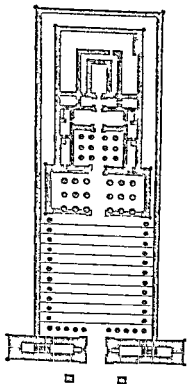


FIG 19.—PLAN OF THE TEMPLE AT EDFO

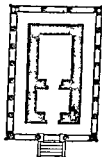


FIG 20.—PLAN OF ONE OF THE SMALLER TEMPLES AT EDFO

quently found between the piers and columns about half the height of the shaft. These temples differ from the larger ones in having their outer walls perpendicular. Fig 20

is a plan of one of these small temples, and no one can fail to remark the striking likeness to some of the Greek temples, there can indeed be little doubt that this nation borrowed the peristylar form of its temples from the Ancient Egyptians.

Although no rock cut temples have been discovered in Egypt proper Nubia is very rich in such remains. The arrangement of these temples hewn out of the rock is closely analogous to that of the detached ones. Figs 21 and 22 show a plan and section of the

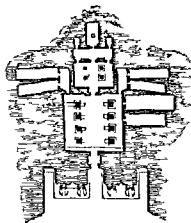


FIG. 21.—GROUND-PLAN OF THE ROCK-CUT TEMPLE AT IBSAMBOUL.

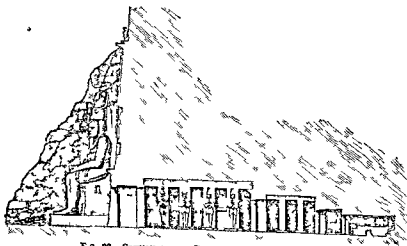


FIG. 22.—SECTION OF THE ROCK-CUT TEMPLE AT IBSAMBOUL.

largest of the rock-cut temples at Ipsamboul which consists of two extensive courts with smaller chambers beyond all connected by galleries. The roof of the large court is supported by eight huge piers the faces of which are sculptured into the form of standing colossi and the entrance is adorned by four splendid seated colossi 68 ft 6 in high. As was the case with the detached temples it will be noticed that the height of the various chambers decreases towards the extremity of the excavation.

The constructional system pursued by the Egyptians which consisted in roofing over spaces with large horizontal blocks of stone led of necessity to a columnar arrangement in the interiors as it was impossible to cover large areas without frequent upright supports. Hence the column became the chief means of obtaining effect and the varieties of form which it exhibits are very numerous. The earliest form is that at Beni Hassan which has already been noticed as the prototype of the Doric order. Figs 23 and 24 are views of two columns of a type more commonly employed. In these the sculptors appear to have imitated as closely as possible the forms of the plant world around them as is shown in Fig. 23 which represents a bundle of reeds and lotus stalks and is the earliest type known of the lotus column which was afterwards developed into a number of forms one of which will be observed on turning to our section of the Hypostyle Hall at Karnak (Fig. 14) as employed for the lateral columns. The stalks are bound round with several belts and the capital is formed by the slightly bulging unopened bud of the flower above which is a small abacus with the architrave resting upon it. The base is nothing but a low circular plinth. The square piers also have frequently a lotus bud carved on them. At the bottom of the shaft is frequently found

columns (Fig 28), but we have no reason for thinking that these fantastic shapes were really executed in stone

Almost the only sculptured ornaments worked on the exteriors of buildings were the curious astragal or bead at all the angles, and the cornice which consisted of a very large cavetto or hollow moulding surmounted by a fillet



FIG 27.—1ST CAPITAL FROM
DENDERA



FIG 28.—FANCIFUL COLUMN FROM
FAMOUS DEPARTMENT AT THEBES

These features are almost invariable from the earliest to the latest period of the style. This cavetto was generally enriched over the doorways, with an ornament representing a circular boss with a wing at each side of it (Fig 29)

One other feature of Egyptian architecture which was peculiar to it must be mentioned, namely, the obelisk



FIG. 93.—CROWNING CORNICE AND BEAD.

The most striking features and the most artistic in the decoration of Egyptian buildings, are the mural paintings and sculptured pictures, which are found in the most lavish profusion, and which exhibit the highest skill in conventionalising the human figure and other objects*. Tombs and temples columns and obelisks are completely covered with graphic representations of peaceful home pursuits, warlike expeditions and battle scenes, and—though not till a late period—descriptions of ritual and mythological delineations of the supposed spirit world which the soul has entered after death. These pictures, together with the

* Conventionalising may be described as representing a part only of the visible qualities or features of an object, omitting the remainder or very slightly indicating them. A black silhouette portrait is an extreme instance of convention, as it displays absolutely nothing but the outline of a profile. For decorative purposes it is almost always necessary to conventionalise to a greater or less extent whatever is represented.

were acquainted with the nature of the arch. Dr Birch mentions a rudimentary arch of the time of the fifth dynasty at Abydos there are also remains of vaulted tombs of the sixth dynasty and in a tomb in the neighbourhood of the Pyramids there is an elementary arch of three stones surmounted by a true arch constructed in four courses. The probability is that true brick arches were built at a very early period but in the construction of their tombs where heavy masses of superincumbent masonry or rock had to be supported the Egyptians seem to have been afraid to risk even the remote possibility of their arches decaying and hence even when they preserved the form of the arch in masonry they constructed it with horizontal courses of stones projecting one over the other and then cut away the lower angles. One dominating idea seems to have influenced them in the whole of their work—*esto perpetua* was their motto and though they have been excelled by later peoples in grace and beauty it is a question whether they have ever been surpassed in the skill with which they adapted their means to the end which they always kept in view.

ANALYSIS OF BUILDINGS

Plan

Floor (technically *Plan*)—The early rock-cut tombs were of course only capable of producing internal effects their floor presents a series of halls and galleries varying in size and shape leading one out of the other and intended by their contrast or combination to produce architectural effect. To this was added in the later rock-cut tombs a façade to be seen directly in front. Much the same account can be given of the disposition of the

built temples. They possess one front, which the spectator approaches, and they are disposed so as to produce varied and impressive interiors, but not to give rise to external display. The supports such as walls, columns, piers, are all very massive and very close together, so that the only wide open spaces are courtyards.

The circle, or octagon, or other polygonal forms do not appear in the plans of Egyptian buildings, but though all the lines are straight, there is a good deal of irregularity in spacing, walls which face one another are not always parallel, and angles which appear to be right angles very often are not so.

The later buildings extend over much space. The adjuncts to these buildings especially the avenues of sphinxes, are planned so as to produce an air of stately grandeur, and in them some degree of external effect is aimed at.

Walls

(The walls are uniformly thick, and often of granite or of stone, though brick is also met with; *eg* some of the smaller pyramids are built entirely of brick. (In all probability the walls of domestic buildings were to a great extent of brick and less thick than those of the temples, hence they have all disappeared.)

(The surface of walls even when of granite, was usually plastered with a thin fine plaster, which was covered by the profuse decoration in colour already alluded to.)

(The walls of the pylons tapered from the base towards the top, and the same thing sometimes occurred in other walls. In almost all cases the stone walls are built of very large blocks, and they show an unrivalled skill in masonry.)

Roofs

The roofing which remains is executed entirely in stone but not arched or vaulted. The rock-cut tombs however as has been stated contain ceilings of an arched shape and in some cases forms which seem to be an imitation of timber roofing. The roofing of the Hypostyle Hall at Karnak provides an arrangement for admitting light very similar to the clerestory of Gothic cathedrals.

Openings

The openings were all covered by a stone lintel and consequently were uniformly square-headed. The inter spaces between columns were similarly covered and hence Egyptian architecture has been and correctly classed as the first among the styles of trabeated architecture. Window openings seldom occur.

Columns

The columns have been already described to some extent. They are almost always circular in plan but the shaft is sometimes channelled. They are for the most part of sturdy proportions but great grace and elegance are shown in the profile given to shafts and capitals. The design of the capitals especially is full of variety and admirably adapts forms obtained from the vegetable kingdom. The general effect of the Egyptian column wherever it is used is that it appears to have as it really has a great deal more strength than is required. The fact that the abacus (the square block of stone introduced between the moulded part of the capital and what it carries) is often smaller in width than the diameter of the column aids very much to produce this effect.

Ornaments

Mouldings are very rarely employed, in fact, the large bead running up the angles of the pylons &c. and a heavy hollow moulding doing duty as a cornice are all that are usually met with. Sculpture and carving occur occasionally, and are freely introduced in later works where we sometimes find statues incorporated into the design of the fronts of temples. Decoration in colour in the shape of hieroglyphic inscriptions and paintings of all sorts was profusely employed (Figs 27-31) and is executed with a truth of drawing and a beauty of colouring that have never been surpassed. As has been pointed out, almost every object drawn is partly conventionalised, in the most skilful manner, so as to make it fit its place as a piece of a decorative system.

Architectural Character

This is gloomy and to a certain extent forbidding, owing to the heavy walls and piers and columns and the great masses supported by them, but when in its freshness and quite uninjured by decay or violence the exquisite colouring of the walls and ceilings and columns must have added a great deal of beauty. This must have very much diminished the oppressive effect inseparable from such massive construction and from the gloomy darkness of many portions of the buildings. It is also noteworthy that the expenditure of materials and labour is greater in proportion to the effect attained than in any other style. The pyramids are the most conspicuous example of this proligality. Before condemning this as a defect in the style it must be remembered that a stability which should defy enemies, earthquakes and the tooth of time was far

more valued than architectural character and that had any mode of construction less lavish of material, and less perfect in workmanship been adopted the buildings of Egypt might have all disappeared ere this

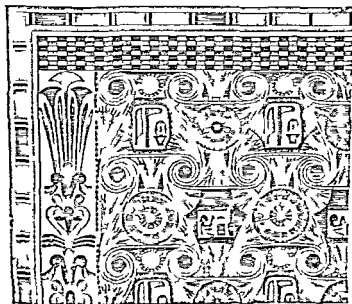
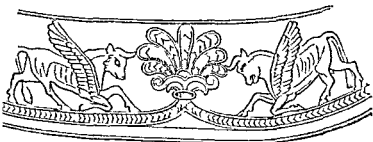


FIG. 25.—PAINTED DECORATION FROM THEBES



1631—SCULPTURED ORNAMENT AT NINEVEH

CHAPTER III

WEST ASIATIC ARCHITECTURE

THE architectural styles of the ancient nations which ruled over the countries of Western Asia watered by the Euphrates and the Tigris from a period about 2900 B.C. down to 330 B.C. are so intimately connected one with another and so dependent one upon the other that it is almost impossible to attempt an accurate discrimination between the Babylonian or ancient Chaldean, the Assyrian and the Persian. A more intelligible idea of the architecture of this long period will be gained by regarding the three styles as modifications and developments of one original style than by endeavouring to separate them. Their sequence can however be accurately determined. First comes the old Chaldean period next the Assyrian during which the great city of Nineveh was built and

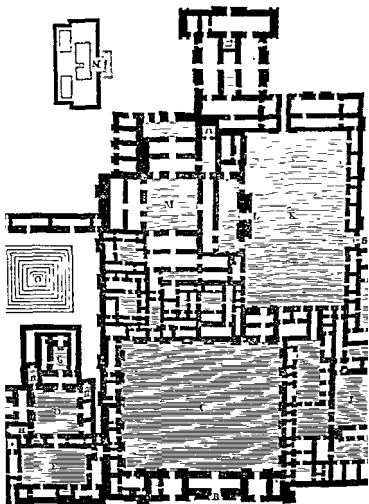
finally the Persian, after Cyrus had subdued the other monarchies and remains exist of all these periods. As to the origin of the Chaldean Kingdom however all is obscure and the earliest date which can be fixed with the slightest approach to probability is 2234 B.C., when Nimrod is supposed to have founded the old Chaldean dynasty. This seems to have lasted about 700 years, and was then overthrown by a conquering nation of which no record or even tradition remains the next two and a half centuries being a complete blank till the rise of the great Assyrian Monarchy about 1290 B.C. which lasted till its destruction by Cyrus about 538 B.C. The Persian Monarchy then endured till the death of Alexander the Great in 333 B.C. after which great confusion arose the empire being broken up among his generals and rapidly falling to pieces.

It is only within a comparatively recent period that we have had any knowledge of the architecture of these countries, but the explorations of M. Botta, commenced in 1843 and continued by M. Place and those of Mr (now Sir A. H.) Layard in 1845 combined with the successful attempts of Prof Grottefend Prof Lassen and Col Rawlinson at deciphering the cuneiform inscriptions have disclosed a new world to the architectural student without which some of the developments of Greek architecture must have remained obscure. The authentic remains of buildings of the early Chaldean period are too few and in too ruinous a condition to allow of a reproduction of their architectural features with any certainty. The buildings, whether palaces or temples, appear to have been constructed on terraces, and to have been several storeys in height and in one instance at Nineveh the walls sloped inwards in a similar manner to those of Egyptian build-

various platforms was obtained by stairs, and the whole building was surrounded by a walled enclosure. From remains found at Warkha we may gather that the walls of the buildings of this period were covered with elaborate plaster ornaments, and that a lavish use was made of colour in their decoration.

Of the later Assyrian period several ruins of buildings, believed to be palaces have been excavated, of which the large palace at Khorsabad, the old name of which was Hissir-Sargon, now a small village between 10 and 11 miles north-east of Nineveh, has been the most completely explored, and thus consequently is the best adapted to explain the general plan of an Assyrian edifice. M. Botta, when French Consul at Mosul, and M. Victor Place conducted these explorations, and the following details are taken from their works. Like all other Assyrian palaces this was reared on a huge artificial mound, the labour of forming which must have been enormous. The reason for the construction of these mounds is not far to seek. Just as the chiefs of a mountainous country choose the loftiest peaks for their castles, so in Assyria, which was a very flat country, the extra defensive strength of elevated buildings was clearly appreciated, and as these absolute monarchs ruled over a teeming population and had a very large number of slaves, and only had to direct their taskmasters to impress labour whenever they wanted it, no difficulty existed in forming elevated platforms for their palaces. These were frequently close to a river, and it is by no means improbable that this was turned into the excavation from which the earth for the mound was taken, and thus formed a lake or moat as an additional defence. A further reason for these terraces may be found in the fact that in a hot climate buildings

erected some 20 or 30 ft above the level of the plain catch the breezes much more quickly than lower edifices. In the case of Khorsabad the terrace was made of sun dried bricks about 15 7 in square and 2 in thick. These bricks were made of the most carefully prepared clay. The terrace was faced by a retaining wall of coursed masonry, nearly 10 ft in thickness. On this terrace the palace was built and it consisted of a series of open courts arranged unsymmetrically surrounded by state or private apartments storehouses stables &c. Great care seems to have been exercised in the accurate orientation of the building but in rather a peculiar manner. Instead of any one façade of the building facing due north the corners face exactly towards the four points of the compass. The courts were all entered by magnificent portals flanked by gigantic figures and were approached by flights of steps. Fig 32 is a plan of the palace of Khorsabad which was placed close to the boundary of the city in fact it was partly outside the city wall proper, though surrounded by a wall of its own. The grand south east portals or propylæa were adorned with huge human headed bulls and gigantic figures and gave access



the walls of an apartment, the joint being always concealed either by colour or plaster. in fact, he remarks that after a time, if he found walls standing showing the brick-work joints, he invariably searched with success among the débris of the chamber for remains of the sculptured decorations which had been used to face the walls.

Not the least interesting of these discoveries was that of the drains under the palace, portions of which were in very good preservation; and all were vaulted, so that there can be no doubt whatever that the Assyrians were acquainted with the use of the arch. This was further proved by the discovery by M. Place of the great arched gates of the city itself, with an archivolt of coloured enamelled bricks forming various patterns, with a semi-circular arch springing from plain jambs. Extreme care was taken by the Assyrian builders in laying the pavements to ensure their being perfectly level: first a layer of kiln-burnt bricks was laid on the ordinary sun-dried bricks forming the terrace, then came a layer of fine sand, upon which the bricks or slabs of the pavement proper were laid, forming in many cases an elegant pattern (see Fig 33)

Great difference of opinion exists as to the manner in which the various apartments of the palace were lighted. M. Place suggests that the rooms were all vaulted on the inside, and the spandrels filled in with earth afterwards to form perfectly flat roofs, and he gives a restoration of the building on such an arrangement; but if he is correct, it is impossible to see how any light at all can have penetrated into the interior of many of the apartments, and as these apartments are decorated with a profusion of paintings it is very difficult to believe that artificial light alone was used in them. M. Place thinks, however, that

in some cylindrical terra-cotta vessels which he found he has hit upon a species of skylight which passed completely through the vault over the rooms, and thus admitted the light from above. This however, can hardly be considered as settled yet. Mr Fergusson, on the other hand, suggests that the thick main walls were carried to a height of about 18 or 19 ft., and that above this were two rows of dwarf columns, one on the inner and the other on the outer edge

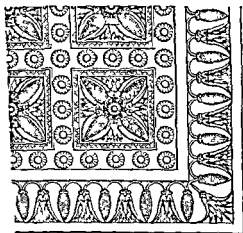


FIG 33—LAVEMENT FROM KHOTUNJIK

of the wall these columns supporting a flat terrace roof and the walls thus forming galleries all round the apartments. Then to cover the space occupied by the apartments themselves it is necessary to assume the existence of rows of columns the capitals of which were at the same level as those of the dwarf columns on the walls. Where one apartment is surrounded on all sides by others the roof over it may have been carried up to a higher level forming

a sort of clerestory. This theory no doubt accounts for many things which are very hard to explain otherwise and derives very strong support from the analogy of Persepolis where slender stone columns exist. Such columns of cedar wood would add enormously to the magnificence and grandeur of the building and if as seems likely most of these Assyrian palaces were destroyed by fire the absence of the remains of columns offers no difficulty. On the other hand in many parts of the palace of Khorsabad no trace of fire remains, and yet here no suggestion of detached columns can be found and moreover it is extremely difficult to arrange columns symmetrically in the various apartments so that doorways are not interfered with. There is also another difficulty viz that if the building called the Harem at Khorsabad was built in this way the apartments would have been open to the view of any one ascending the lofty building called the observatory. It is quite possible that further explorations may tend to elucidate this difficult question of roofing but at present all that can be said is that none of the theories that have been put forward is wholly satisfactory.

As no columns at all exist we cannot say what capitals were employed but it is probable that those of Persepolis which will be shortly described were copied from an earlier wooden form which may have been that used by the Assyrian builders. There is however capping the terrace on which the temple was erected at Khorsabad a good example of an Assyrian cornice which is very similar indeed to the forms found in Egypt and some of the sculptured bas-reliefs which have been discovered depict rude copies of Assyrian buildings drawn by the people themselves and it is most interesting to notice that just as we found in the Egyptian style the pto-Doric column

so in the Assyrian we find the proto-Ionic (Figs 34 34A) and possibly also the proto-Corinthian (Fig 34B)

The third branch of West Asiatic architecture is the Persian which was developed after Cyrus had conquered the older monarchies, and which attained its greatest magnificence under Darius and Xerxes. The Persians were originally a brave and hardy race inhabiting the mountainous region south of Media which slopes down to the Persian Gulf. Until the time of Cyrus who was the founder



FIG 34A—PROTO-IONIC CAPITAL FROM ASSYRIAN SCULPTURE



FIG 34—PROTO-IONIC COLUMN



FIG 34B—PROTO-CORINTHIAN CAPITAL FROM ASSYRIAN SCULPTURE

of the great kingdom of Persia they inhabited small towns had no architecture and were simple barbarians. But after Cyrus had vanquished the wealthy and luxurious Assyrian monarchs and his warriors had seen and wondered at the splendour and splendour of the Assyrian palaces it was natural that his successors should strive to emulate for themselves the display of their vassals. Therefore, having no indigenous style to fall back upon the artisans who were summoned to build the tomb of the founder of the monarchy and the palaces of his successors, simply copied

the forms with which they were acquainted. Fortunately the sites for the new palaces were in a locality where building stone was good and abundant and the presence of this material had a modifying effect upon the architecture.

The best known of the remains which date as far back as the earlier Persian dynasties is the so-called tomb of Cyrus at Pasargadae near Murghab (Fig. 35). This may

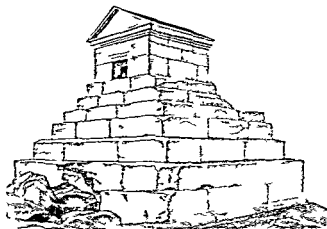


FIG. 35.—TOMB OF CYRUS.

be looked upon as a model in white marble of an old Chaldean temple such as the Birs-i Nimrud. There are the same platforms diminishing in area as the top is approached and on the topmost platform is a small cell or temple with a gabled stone roof which probably originally contained the sarcophagus. It is, however at Persepolis the real capital of the later Persian kings, whose grandeur and wealth were such that Alexander is

said to have found there treasure to the amount of thirty millions of pounds sterling, that we find the most magnificent series of ruins. These were carefully measured and drawn by Baron Texier in 1835, and his work and that of MM. Flandrin and Coste are those from which the best information on this subject can be obtained.

Persepolis is about 35 miles north-east of Shiraz, close to the main highway to Ispahan, at the foot of the mountain range which bounds the extensive plain of Nurdusht. The modern inhabitants of the district call the ruins Takht-i-Jamshid (or the building of Jamshid), but the inscriptions that have been deciphered prove that Darius and Xerxes were the chief builders. Just as was the case with the Assyrian ruins, these stand on an immense platform which rises perpendicularly from the plain and abuts in the rear against the mountain range. Instead, however, of this platform being raised artificially, it was cut out of the rock, and levelled into a series of terraces, on which the buildings were erected. The platform, whose length from north to south is about 1582 ft., and breadth from east to west about 938 ft., is approached from the plain by a magnificent double staircase of black marble, of very easy rise, not more than 4 in. each step. Its general height above the level of the plain was originally 34 ft. 9 in. The retaining wall of the platform is not straight, but has in it 40 breaks or set-offs of unequal dimensions. At the top of the staircase are the remains of a building with four columns in the centre and with large portals both back and front, each of which is adorned with gigantic bulls, strikingly resembling those found at Khorsabad. Those in the front have no wings, but those in the rear have wings and human heads. It has been suggested that these are the ruins of one of those large covered gates

frequently mentioned in the Bible under the shelter of which business was transacted and which probably formed the entrance to the whole range of courts and buildings. After passing through this gateway and turning southwards at a distance of 177 feet from it another terrace

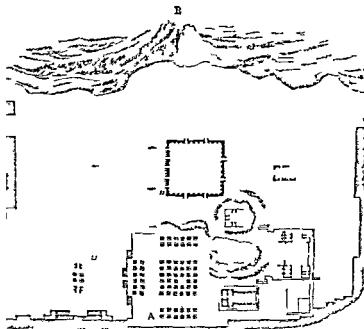


FIG. 25A.—GENERAL PLAN OF THE BUILDINGS AT PER EPOLES.

is reached 9 ft. 2 in. higher than the first one. This terrace also is approached by four flights of steps profusely decorated with sculptured bas-reliefs and on it are the remains of the Chel al Minar the grand hexastyle Hall of

Xerxes, which must have been one of the most magnificent buildings of ancient times. This building is marked A on the general plan. It consisted of a central court, containing thirty six columns, the distance from centre to centre of the outside columns being 142 ft 8 in. This court was surrounded by walls, of which nothing now remains but the jambs of three of the doorways. On three sides of this court, to the north, east and west, were porticoes of twelve columns each precisely in a line with those of the central court, the distance from centre to centre of the columns being 28 ft 6 in. These columns, both in their proportions and shape, suggest an imitation of timber construction. On the south the court was probably terminated by a wall, and Mr Fergusson suggests that the corners between the porticoes were filled up with small chambers. The most striking feature of this hall or palace must have been its loftiness: the height of the columns varying from 63 ft 8 in to 64 feet from bottom of base to top of capital. The shafts were slightly tapering and had 48 flutings and were 4 ft 6 in in diameter in the upper part. The bases of the columns show hardly any variations and consist of a series of mouldings such as is shown in Fig 36, the lowest part of this moulded base is enriched

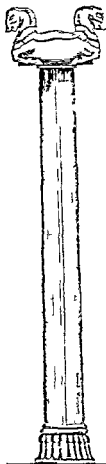


FIG. 22B.—Column from Temple
Foss, East and West Fortresses.



FIG. 22C.—Column from
Persepolis, North Fortress.

the feet resting on the shaft and the knees projecting, the total height of these capitals is 7 ft 4 in. Between the necks of the bulls rested the wooden girder which supported the cross-bearers of the roof. In the north portico and, so far as can be ascertained, in the central court, the shaft of the column was much shorter, and supported a fantastic elongated capital, consisting of a sort of inverted cup, supporting an elegant shape much resembling the Egyptian palm leaf capital, above which, on all the four sides are double spirals resembling the ornaments of the Greek Ionic capital known as volutes but placed perpendicularly, and not, as in the Ionic capital, horizontally. These volutes again may have supported double bulls, which would make the total height of the columns the same as those of the east and west porticoes. The doorways have cornices enriched with leaves, similar to those found at Khorsabad, which have already been noticed as bearing a decided resemblance to the Egyptian doorways.

On other terraces, slightly raised above the main platform, exist the remains in a more or less ruined condition, of numerous other courts and halls, one of which has no less than one hundred columns to support its roof, but the height of this building was much inferior to that of the Chehil Minar. The existence of these columns leaves no doubt that these buildings were covered with flat roofs, and that over part of them was a raised talar or prayer platform is rendered probable from the introduction of such a feature into the sculptured representation of a palace façade which forms the entrance to the rock tomb of Darius, which was cut out of the mountain at the back of the terrace of Persepolis. The position of this tomb on the general plan is marked B, and Fig. 37 is a view

of the entrance, which was probably intended as a copy of one of the halls. All the walls of the palace were profusely decorated with sculptured pictures, and various indications occur which induce the belief that painting was used to decorate those portions of the walls that were not faced with sculptured slabs.

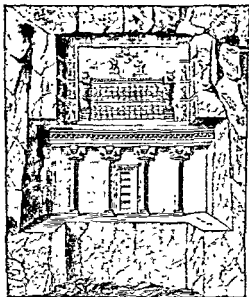


FIG. 37.—THE ROCK-CUT TOMB OF DARIUS.

The superior lightness and elegance of the Persepo... ruins to those of an earlier epoch will not fail to be noticed, but there is still a certain amount of barbaric clumsiness discernible, and it is not till we come to Greek architecture that we see how an innate genius for art and

such as was possessed by that people could cull from previous styles everything capable of being used with effect and discard or run off all the unnecessary exuberances of those styles which offend a critically artistic taste

ANALYSIS OF BUILDINGS

Plan

The floor space of a great Assyrian or Medo Persian building was laid out on a plan quite distinct from that of an Egyptian temple for the rooms are almost always grouped round quadrangles. The buildings are also placed on terraces and no doubt would secure external as well as internal effects to which the imposing flights of stairs provided would largely contribute. We find in Assyrian palaces halls comparatively narrow in proportion to their great length but still so wide that the roofing of them must have been a serious business and we find them arranged side by side often three deep. In the Persian buildings halls nearly square on plan, and filled by a multitude of columns occur frequently. In the plan of detached buildings like the Birs i Nimrud we are reminded of the pyramids of Egypt which no doubt suggested the idea of pyramidal monuments to all subsequent building peoples.

course the structures were far more liable to decay. Accordingly, sturdy as their walls are, we find them at the present day reduced to mere shapeless mounds, but of prodigious extent.

Roofs. ✓

We can only judge of the roofs by inference, and it has already been stated that a difference of opinion exists respecting them. It appears most probable that a large proportion of the buildings must have been roofed by throwing timber beams from wall to wall and forming a thick platform of earth on them, and must have been lighted by some sort of clerestory. At any rate the stone roofs of the Egyptians seem to have been discarded, and with them the necessity for enormous columns and piers placed very close together. In some bas-reliefs, buildings with roofs of a domical shape are represented.

Openings.

Doorways are the openings chiefly met with, and it is not often that the superstructure, whether arch or lintel, remains, but it is clear that in some instances, at least, openings were arched. Great attention was paid to important doorways, and a large amount of magnificent sculpture was employed to enrich them.

Columns. ✓

The columns most probably were of wood in Assyrian palaces. In some of the Persian ones they were of marble, but of a proportion and treatment which point to an imitation of forms suitable for wood. The bases and capitals

of these slender shafts are beautiful in themselves, and very interesting as suggesting the source from which some of the forms in Greek architecture were derived; and on the bas-reliefs other architectural forms are represented which were afterwards used by the Greeks.

Ornaments.

Sculptured slabs, painted wall decorations, and terracotta ornamentation were used as enrichments of the walls. These slabs, which have become familiarly known through the attention roused by the discoveries of Sir A. H. Layard and the specimens sent by him to the British Museum, are objects of the deepest interest; so are the carved bulls from gateways. In the smaller and more purely ornamental decorations the honeysuckle, and other forms familiar to us from their subsequent adoption by Greek artists, are met with constantly, executed with great taste.

Architectural Character.

A character of lavish and ornate magnificence is the quality most strongly displayed by the architectural remains of Western Asia; and could we have beheld any one of the monuments before it was reduced to ruin, we should probably have seen this predominant to an extent of which it is almost impossible now to form an adequate idea.



FIG. 39.—SCULPTURED ORNAMENT AT ALLAHABAD.

CHAPTER IV

ORIENTAL ARCHITECTURE.

Hindu Architecture

HINDU architecture is not only unfamiliar but un congenial to Western tastes, and as it has exercised no direct influence upon the later styles of Europe, it will be noticed in far less detail than the magnitude and importance of many Indian buildings which have been examined and measured during the last few years would otherwise claim, although the exuberant wealth of ornament exhibited in these buildings denotes an artistic genius of very high order, if somewhat uncultured and barbaric. As by far the largest number of Hindu buildings are of a date much later than the commencement of our era a strict adherence to chronological sequence would scarcely allow the introduction of this style so early in the present volume, but we know that several centuries before Christ powerful kingdoms and wealthy cities existed in India, and as it seems clear also that in architecture and art, as well as in

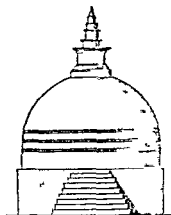


FIG. 33.—DAGORA FROM CEYLON

These are of two kinds,—the topes or stupas proper which were erected to commemorate some striking event or to mark a sacred spot and the dagobas, which were built to cover the relics of Buddha himself or some Buddhist saint. These topes consist of a slightly stilted hemispherical dome surmounting a substructure, circular in plan which forms a sort of terrace, access to which is obtained by steps. The domical shape was, however ex

ternil only, as on the inside the masonry was almost solid a few small cavities only being left for the protection of various jewels &c. The dome was probably surmounted by a pinnacle as shown in Fig 39. In the neighbourhood of Bhilsa in Central India there are a large number of these topes of which the largest that of Sanchi measures 121 ft. in diameter and 56 ft. in height it was erected by King Asoka.

Two kinds of edifices which are not tombs remain the chaityas (temples or halls of assembly) and viharas or monasteries which were generally attached to the chaityas. These erections were either detached or cut in the rock and it is only the rock-cut ones of which remains exist of an earlier date than the commencement of the Christian era. The earliest specimen of a rock cut chaitya is in the Nigope cave near Behar constructed about 200 B.C. This consists of two compartments an outer rectangular one 32 ft 9 in by 19 ft 1 in and an inner circular one 16 ft in diameter. The Lomas Rishi cave is of a slightly later date both of these rock cut temples exhibit in every detail a reproduction of wooden forms. In the doorway the stone piers slope inwards just like raking wooden struts and the upper part represents the ends of longitudinal rafters supporting a roof. Later on the builders emancipated themselves to a certain extent from this servile adhesion to older forms and Fig 40 gives a plan and section of a later chaitya at Karli near Poona. This bears a striking resemblance to a Christian basilica * there is first the fore-court then a rectangular space divided by columns into nave and aisles and terminated by a semicircular apse.

* See Chap. X for an illustration of a Christian Basilica

The nave is 25 ft. 7 in. wide, and the aisles 10 ft. each; the total length is 126 ft. Fifteen columns separate the nave from the aisles, and these have bases, octagonal shafts, and rich capitals. Round the apse the columns are replaced by piers. The side aisles have flat roofs, and the central nave a stilted semicircular one, practically a vault, which

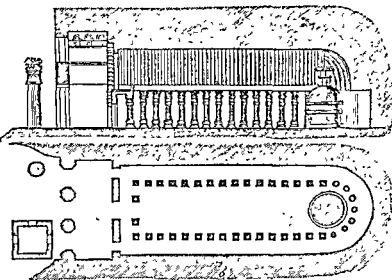


FIG. 40 —CHAITYA NEAR POONA.

at the apse becomes a semicircular dome, under which is the dagoba, the symbol of Buddhism. The screen separating the forecourt from the temple itself is richly ornamented with sculpture.

The older viharas or monasteries were also cut in the rock (Figs. 41, 42), and were divided into cells or chambers;

quently of very large dimensions, that at Bharhut—which is one of the most recently discovered—measuring 275 ft. in circumference, with a height of 22 ft 6 in. The date of these erections is frequently very difficult to determine, but the chief authorities generally concur in the opinion

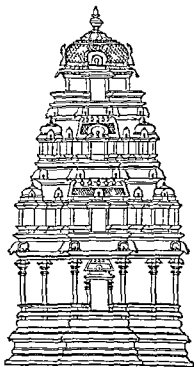


FIG. 41.—VIHARA FROM MANASARA

that none are found dating earlier than about 250 B.C., nor later than 500 A.D., so that it is pretty certain they must have been appropriated to some form of Buddhist worship.

All the buildings that we have mentioned were devoted

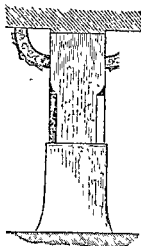


FIG. 44.—BRACKET CAPITAL.

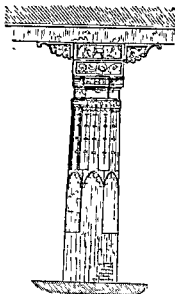


FIG. 45.—COLUMN FROM AJUNT.

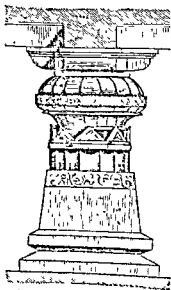


FIG. 46.—COLUMN FROM ELLORA.

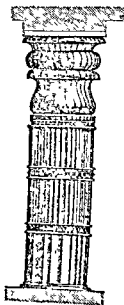


FIG. 47.—COLUMN FROM

to the worship of Buddha but the Jain schism Brahminism and other cults had their representative temples and buildings a full description of which would require a volume many times larger than the present one. Many of the late detached buildings display rich ornamentation and elaborate workmanship. They are generally of a pyramidal shape several storeys in height covered with intricately cut mouldings and other fantastic embellishments.

Columns are of all shapes and sizes, brackets frequently take the place of capitals, and where capitals exist almost every variety of fantastic form is found. It has been stated that no fixed laws govern the plan or details of Indian buildings but there exists an essay on Indian Architecture by Ram Raz—himself a Hindu—which tends to show that such a statement is erroneous, as he quotes original works of considerable antiquity which lay down stringent rules as to the planning of buildings, their height and the details of the columns. It is probable that a more extended acquaintance with Hindu literature will throw further light on these rules.

Of the various invasions which have occurred some have left traces in the architecture of India. None of these are more interesting than certain semi-Greek forms which are met with in the Northern Provinces and which without doubt are referable to the influence of the invasion under Alexander the Great. A far more conspicuous and widespread series of changes followed in the wake of the Mohammedan invasions. We shall have an opportunity later on of recurring to this subject,* but it is one to which attention should be called at this early stage lest it should be thought that a large and splendid part of Indian architecture had been overlooked.

* See chapter on Saracenic Architecture.

The Buddhist temples of China have a strong affinity to those of India. The largest is that at Honan, the southern suburb of Canton. This is 306 ft long by 174 ft wide, and consists of a series of courts surrounded by colonnades and cells for the *bonzes* or priests. In the centre of the courtyard is a series of pavilions or temples connected by passages, and devoted to the worship of the idols contained in them. On each side of the main court, against the outer wall, is another court, with buildings round it, consisting of kitchen and refectories on the one side, and hospital wards on the other. It is almost certain that this is a reproduction of the earlier forms of chaitya and viharas which existed in India, and have been already referred to. The temple of Honan is two storeys in height, the building itself being of stone but the colonnade surrounding it is of wood on marble bases. On the second storey the columns are placed on two sides only, and not all round. The columns have no capitals but have projecting brackets. The roof of each storey projects over the columns, and has a curved section which is, in fact, peculiar to Chinese roofs, and it is enriched at the corners with carved beasts and foliage. This is a very common form of temple

Chinese and Japanese Architecture.

Although the Chinese have existed as a nation continuously for between two and three thousand years if not longer, and at a very early period had arrived at a high state of artistic and scientific cultivation, yet none of their buildings with which we are acquainted has any claim on our attention because of its antiquity. Several reasons may be assigned for this, the principal being that the Chinese seem to be as a race singularly unsusceptible to all emotions. Although they reverence their dead ancestors yet this reverence never led them, as did that of the Egyptians, Etruscans, and other nations to a lavish expenditure of labour or materials to render their tombs almost as enduring as the everlasting hills. Though waves of religious zeal must have flowed over the country when Confucius inculcated his simple and practical morality and gained an influential following and again when Buddhism was introduced and speedily became the religion of the greater portion of the people their religious emotion never led them as it did the Greeks and the Mediæval builders to erect grand and lasting monuments of sacred art. When most of the Western

Nankin, which is 40 ft in diameter at its base, and is faced inside and outside with white glazed porcelain slabs keyed into the brick core. The roof tiles are also of porcelain in bands of green and yellow, and at each angle is a moulding of larger tiles red and green alternately. The effect of the whole is wonderfully brilliant and dazzling. Apart from the coloured porcelain nearly every portion of a Chinese temple or pagoda is painted colour forming the

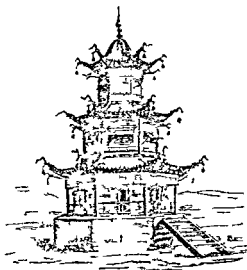


FIG. 43.—A SMALL PAGODA.

chief means of producing effect. But as nearly everything is constructed of wood there was and is no durability in these edifices.

In public works of utility such as roads, canals—on of which is nearly 700 miles in length—and boldly designed bridges the Chinese seem to have shown a more enlightened mind and the Great Wall which was

built to protect the northern boundary of the kingdom about 200 B.C., is a wonderful example of engineering skill. This wall which varies from 15 to 30 ft in height, is about 25 ft thick at the base, and slopes off to 20 ft at the top. It is defended by bastions placed at stated intervals which are 40 ft square at the base and about the same in height, the wall is carried altogether through a course of about 1400 miles following all the sinuosities of the ground over which it passes. It is a most remarkable fact that a nation should have existed 2000 years ago capable of originating and completing so great a work. But it is still more remarkable that such a nation possessing moreover as it does a great faculty in decorative art applied to small articles of use and fancy should be still leading a joyous and prosperous existence and yet should have so little to show in the way of architecture properly so termed at the present time.

Japan like China possesses an architecture but one exclusively of wood. For although the use of stone for bridges walls &c. had been general all houses and temples were invariably built of wood until the recent employment of foreigners led to the erection of brick and stone buildings. The consequence has been that nearly all the old temples have been burnt down and rebuilt several times and though it is probable that the older forms were adhered to when the buildings were re-erected it is only by inference that we can form an idea of the ancient architecture of the country. The heavy curved roofs which are so characteristic of Chinese buildings are found also in Japan but only in the Buddhist temples and thus makes it probable that this form of roof is not of native origin but was introduced with the Buddhist cult. The earlier Shinto temples have a different form of roof which is without the upward curve but which has nearly as much projection at the

eaves as the curved roofs. Where the buildings are more than one story in height the upper one is always set somewhat back, as we saw was the case in the Chinese pagodas, and considerable and pleasing variety is obtained by treating the two storeys differently. Very great skill in carving is shown, all the posts, brackets, beams, and projecting rafters being formed into elaborate representations of animals and plants, or quaintly conceived grotesques, and the flat surfaces have frequently a shallow incised arabesque pattern intertwined with foliage. The roofs are always covered with tiles and a curious effect is produced by enriching the hips and ridges with several courses of tiles in cement, thus making them rise considerably above the other portions of the roof. A peculiar feature of Japanese houses is that the walls whether external or internal, are not filled in with plaster, but are constructed of movable screens which slide in grooves formed in the framing of the partitions. Thus all the rooms can easily be thrown together or laid open to the outer air in hot weather. All travellers in Japan remark upon the impossibility of obtaining privacy in the hotels in consequence of this.

The Shinto temples are approached through what might be termed an archway, only that the arch does not enter into its composition. This erection is called a *Toru* and is thus described by Professor Conder *—‘It is composed of two upright posts of great thickness, each consisting of the whole trunk of a tree rounded, about 1½ ft. high and placed 12 ft. apart. Across the top of these is placed a wooden lintel, projecting considerably and curving upwards at the ends. Some few feet below this another horizontal piece is tenoned into the uprights having a

* Paper communicated to the Royal Institute of Architects.



FIG. 42.—GREEK HONEYSUCKLE ORNAMENT

CHAPTER V

GREEK ARCHITECTURE.

Buildings of the Doric Order

THE architecture of Greece has a value far higher than that attaching to any of the styles which preceded it on account of the beauty of the buildings and the astonishing refinement which the best of them display. This architecture has a further claim on our attention as being virtually the parent of that of all the nations of Western Europe. We cannot put a finger upon any features of Egyptian Assyrian or Persian architecture, the influence

should be exactly compensated and so the building should appear to the spectator to be perfectly proportioned.

The Parthenon like many if not all Greek buildings was profusely decorated with coloured ornaments of which nearly every trace has now disappeared but which must have contributed largely to the splendid beauty of the building as a whole and must have emphasised and set off its parts. The ornaments known as Doric frets were largely employed. They consist of patterns made entirely of straight lines interlacing and while preserving the severity which is characteristic of the style they permit of the introduction of considerable richness.

The principal remaining examples or fragments of Greek Doric may be enumerated as follows —

IN GREECE

Temple of (?) Athens at Corinth ab. 650 B.C.

Temple of (?) Zeus in the island of Ægina ab. 550 B.C.

Temple of Theseus (Theseum) at Athens, 465 B.C.

Temple of Athena (Parthenon) on the Acropolis at Athens fin. 438 B.C.

The Propylæa, on the Acropolis at Athens 436-431 B.C.

Temple of Zeus at Olympia.

Temple of Apollo Epicurius at Bassæ * in Arcadia (designed by Ictinus)

Temple of Apollo Epicurius at Phigalea in Arcadia (built by Ictinus)

Temple of Athena, on the rock of Sounion in Attica

Temple of Nemesis at Rhamnus in Attica.

Temple of Demeter (Ceres) at Elea in Attica.

IN SICILY AND SOUTH ITALY

Temple of (?) Zeus, at Agrigento, in Sicily (begun B.C. 480)

Temple at Egæta (or Segesta) in Sicily

Temple of (?) Zeus, at Selinus in Sicily (? ab. 410 B.C.)

Temple of (?) Athena, at Syracuse, in Sicily

Temple of Poseidon at Paestum, in South of Italy (? ab. 550 B.C.)

* * Exterior Doric—Interior Ionic

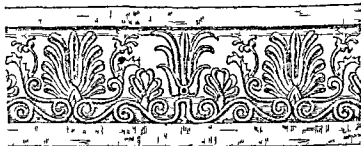


FIG. 66.—PALMETTE AND HODOSTACHE.

CHAPTER VI

GREEK ARCHITECTURE.

Buildings of the Ionic and Corinthian Orders

THE Doric was the order in which the full strength and the complete refinement of the artistic character of the Greeks were most completely shown. There was a great deal of the spirit of severe dignity proper to Egyptian art in its aspect, but other nationalities contributed to the formation of the many-sided Greek nature, and we must look to some other country than Egypt for the spirit which inspired the Ionic order. This seems to have been brought into Greece by a distinct race, and shows marks of an Asiatic origin. The feature which is most distinctive is the one most distinctly Eastern—the capital of the column, ornamented always by volutes, i.e. scrolls, which bear a close resemblance to features similarly employed in the columns found at Persepolis. The same resemblance can be also detected in the moulded bases, and even the shafts of the columns, and in many of the ornaments employed throughout the buildings.

In form and disposition an ordinary Ionic temple was similar to one of the Doric order, but the general proportions are more slender and the mouldings of the order are more numerous and more profusely enriched. The column in the Ionic order had a base often elaborately

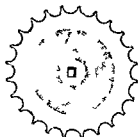


FIG. 61.—PLAN OF IONIC COLUMN SHOWING ITS FLUTES.

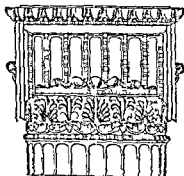


FIG. 62.—IONIC CAPITAL SIDE ELEVATION.

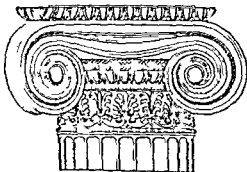


FIG. 6.—IONIC CAPITAL FRONT ELEVATION.

fillets than in the Doric. The distinctive feature as in all the orders is the capital (Figs 68-69) which is recognised at a glance by the two remarkable ornaments already alluded to as like scrolls, and known as volutes. These generally formed the faces of a pair of cushion-shaped features which could be seen in a side view of the capital but sometimes volutes stand in a diagonal position and in almost every building they differ slightly. The abacus is less deep than in the Greek Doric, and it is always moulded at the edge which was never the case with the Doric abacus. The entablature (Fig 70) is generally speaking richer than that of the Doric order. The architrave for example has three fascias instead of being plain. On the other hand, the frieze has no triglyphs, and but rarely sculpture. There are more members in the cornice several mouldings being combined to fortify the supporting portion. These have sometimes been termed the bed mouldings and among them occurs one which is almost typical of the order and is termed a dentil band. This moulding presents the appearance of a plain square band of stone in which a series of cuts had been made dividing it into blocks somewhat resembling teeth whence the name. Such an ornament is more naturally constructed in wood than in stone or marble but if the real derivation of the Ionic order as of the Doric, be in fact from timber structures, the dentil band is apparently the only feature in which that origin can now be traced. The crowning member of the cornice is a partly hollow moulding technically called a cyma recta less vigorous than the convex ovolo of the Doric this moulding and some of the bed mouldings were commonly enriched with carving. Altogether more slender and less vigorous more carved enrichment and less painted decoration more reliance on architectural orna-

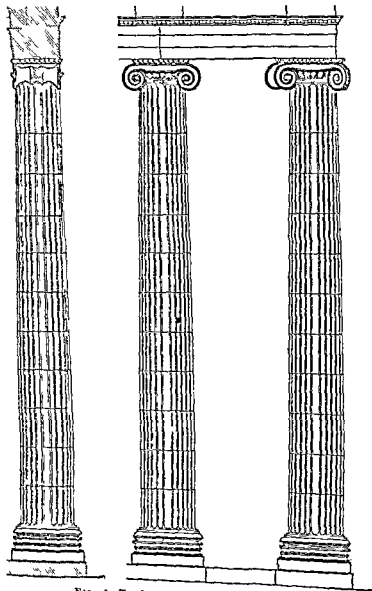
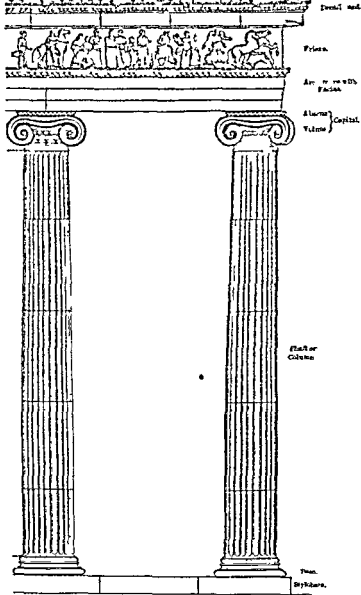


FIG. 9.—THE IONIC ORDER. FROM PRAXIS, ASIA MINOR



ment and less on the work of the sculptor appear to distinguish those examples of Greek Ionic which have come down to us as compared with Doric buildings.

The most numerous examples of the Ionic order of which remains exist are found in Asia Minor, but the most refined and complete is the Erechtheum at Athens.

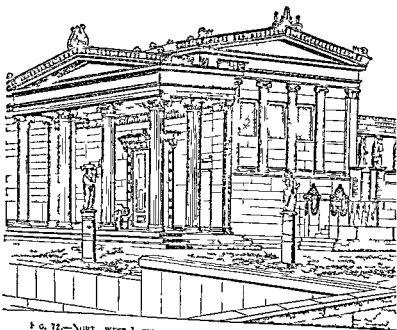


FIG. 72.—NORTH WEST VIEW OF THE ERECOTHEUM IN THE TIME OF PERICLES.

(Figs 72-73) a composite structure containing three temples built in juxtaposition but differing from one another in scale, levels, dimensions and treatment. The principal order from the Erechtheum (Fig 71) shows a large amount of enrichment introduced with the most refined and severe taste. Specially remarkable are the ornaments (borrowed from the Assyrian honeysuckle)

beauty and vigour enable the imagination partly to restore this splendid feature, which certainly was one of the most sumptuous modes of decorating a building by the aid of sculpture which has ever been attempted, and the effect must have been rich beyond description.

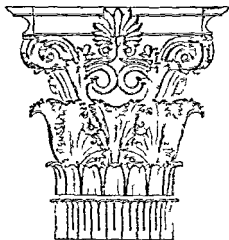
It is worth remark that the Erechtheum which has been already referred to contains an example of a different, and perhaps a not less remarkable mode of combining sculpture with architecture. In one of its three porticoes (Fig. 72) the columns are replaced by standing female figures, known as caryatidæ and the entablature rests on their heads. This device has frequently been repeated in ancient and in modern architecture but except in some comparatively obscure examples the sculptured columns of Ephesus do not appear to have been imitated.

Another famous Greek work of art the remains of which have been like the Temple of Diana disinterred by the energy and skill of a learned Englishman belonged to the Ionic order. To Mr Newton we owe the recovery of the site and considerable fragments of the architectural features, of the Mausoleum of Halicarnassus one of the ancient wonders of the world. The general outline of this monument must have resembled other Greek tombs which have been preserved such for example as the Lion Tomb at Cnidus that is to say the plan was square, there was a basement, above this an order and above that a steep pyramidal roof rising in steps not carried to a point but stopping short to form a platform on which was placed a quadriga (or four horse chariot). This building is known to have been richly sculptured and many fragments of great beauty have been recovered. Indeed it was probably its elaboration as well as its very unusual height (for the Greek buildings were seldom lofty) which led to its being so celebrated.

beauty and vigour enable the imagination partly to restore this splendid feature, which certainly was one of the most sumptuous modes of decorating a building by the aid of sculpture which has ever been attempted, and the effect must have been rich beyond description.

It is worth remark that the Erechtheum, which has been already referred to, contains an example of a different and perhaps a not less remarkable, mode of combining sculpture with architecture. In one of its three porticoes (Fig. 72) the columns are replaced by standing female figures, known as caryatidæ, and the entablature rests on their heads. This device has frequently been repeated in ancient and in modern architecture, but, except in some comparatively obscure examples the sculptured columns

The Corinthian order, the last to make its appearance was almost as much Roman as Greek, and is hardly found in any of the great temples of the best period of which remains exist in Greece though we hear of its use. For example Pausanias states that the Corinthian order was employed in the interior of the Temple of Athena Alea at Tegea built by Scopas to which a date shortly after the year 394 B.C. is assigned. The examples which we possess



A wide interval of time and a great contrast in taste separate the early works of Pelasgic masonry and even the chamber at Mycenæ from even the rudest and most archaic of the remaining Hellenic works of Greece. The

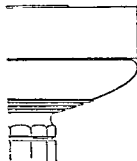


FIG. 52.—GREEK DORIC CAPITAL
FROM SELINUS

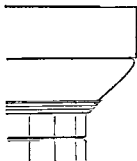


FIG. 53a.—GREEK DORIC
CAPITAL FROM THE TREASURY

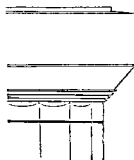


FIG. 53b.—GREEK DORIC CAPITAL FROM SAMOTHRACE

Doric temple at Corinth is attributed, as has been stated, to the seventh century B.C. This was a massive masonry structure with extremely short, stumpy columns, and strong mouldings, but presenting the main features of the Doric style, as we know it, in its earliest and rudest form.

Successive examples (Figs 53 to 53b) show increasing slenderness of proportions and refinement of treatment and are accompanied by sculpture which approaches nearer and nearer to perfection, but in the later and best buildings, as in the earliest and rudest, certain forms are retained for which it seems impossible to account, except on the supposition that they are reproductions in stone or marble of a timber construction. These occur in the entablature while the column is of a type which it is hard to believe is not copied from originals in use in Egypt many centuries earlier, and already described (chap. II).

✓ We will now proceed to examine a fully-developed Greek Doric temple of the best period, and in doing so we shall be able to recognise the forms referred to in the preceding paragraph as we come to them. The most complete Greek Doric temple was the Parthenon, the work of the architect Ictinus the temple of the Virgin Goddess Athene (Minerva) at Athens, and on many accounts this building will be the best to select for our purpose.*

The Parthenon at Athens stood on the summit of a lofty rock and within an irregularly shaped enclosure, something like a cathedral close, entered through a noble gateway†. The temple itself was of perfectly regular plan, and stood quite free from dependencies of any sort. It consisted of a cella or sacred cell, in which stood the statue of the goddess, with one chamber (the treasury) behind. In the cella and also in the chamber behind, there were columns. A series of columns surrounded this building, and at either end was a portico eight columns wide, and two deep. There were two pediments or gables, of flat pitch, one at each end. The whole stood on a basement

* See Frontispiece and Figs 54 and 55.

† The Propylæa.

such building, have come to be regarded as the index or characteristic from an inspection of which the order and the degree of its development can be recognised, just as a botanist recognises plants by their flowers. By reproducing the column and entablature, almost all the characteristics of either of the orders can be copied, and hence a technical and somewhat unfortunate use of the word "order" to signify these features only has crept in and has overshadowed and to a large extent displaced its wider meaning. It is difficult in a book on architecture to avoid employing the word "order" when we have to speak of a column and its entablature, because it has so often been made use of in this sense. The student must however, always bear in mind that this is a restricted and artificial sense of the word, and that the column belonging to any order is always accompanied by the use throughout the building of the appropriate proportions, ornaments and mouldings belonging to that order.

The origin of Greek architecture is a very interesting subject for inquiry, but, owing to the disappearance of almost all very early examples of the styles, it is necessarily obscure. Such information, however, as we possess, taken together with the internal evidence afforded by the features of the matured style, points to the influence of Egypt, to that of Assyria and Persia, and to an early manner of timber construction—the forms proper to which were retained in spite of the abandonment of timber for marble—as all contributing to the formation of Greek architecture.

In Asia Minor a series of monuments, many of them rock-cut, has been discovered, which throw a curious light upon the early growth of architecture. We refer to tombs found in Lycia, and attributed to about the

seventh century B.C. In these we obviously have the first work in stone of a nation of ship builders. A Lycian tomb—such as the one now to be seen, accurately restored, in the British Museum—represents a structure of beams of wood framed together, surmounted by a roof which closely resembles a boat turned upside down. The planks, the beams to which they were secured, and even a ridge similar to the keel of a vessel, all reappear here, showing that the material in use for building was so universally timber, that when the tomb was to be “graven in the rock for ever” the forms of a timber structure were those that presented themselves to the imagination of the sculptor. In other instances the resemblance to shipwrights work disappears, and that of a carpenter is followed by that of the mason. Thus we find imitations of timber beams framed together and of overhanging low pitched roofs in some cases carried on unsquared rafters lying side by side, in several of these tombs.

What happened on the Asiatic shore of the Egean must have occurred on the Greek shores and though none of the very earliest specimens of reproduction in stone of timber structures has come down to us there are abundant traces as we shall presently see, of timber originals in buildings of the Doric order. Timber originals were not, however, the only sources from which the early inhabitants of Greece drew their inspiration.

Constructions of extreme antiquity, and free from any appearance of imitating structures of timber, mark the sites of the oldest cities of Greece, Mycenæ and Orchomenos for example, the most ancient being Pelasgic city walls of unwrought stone (Fig 51). The so called Treasury of Atreus at Mycenæ, a circular underground chamber 48 ft 6 in in diameter, and with a pointed vault is a well known specimen of more regular yet archaic building. Its vault

is constructed of stones corbelling over one another and is not a true arch (figs 2 & 3). The treatment of the monumental column found here and of the remains of

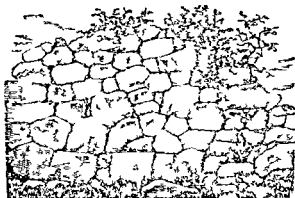


FIG 5.—ANCIENT GREEK WALL OF LOWER CITY STONE FROM SAMOTHRACE.

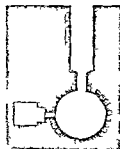


FIG 5L.—PLAN OF TREASURY OF ATREUS AT MYCENAE.



FIG 5A.—VIEW OF THE TREASURY OF ATREUS AT MYCENAE.

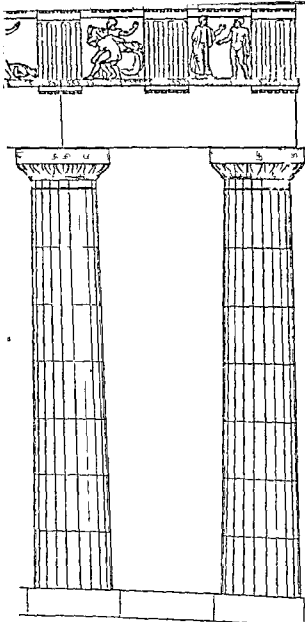


Fig 57.—T & GREEK DORIC ORDER FROM T & G. L. 1844

diameters high the whole height including the stylobate or steps might be divided into nine parts of which two go to the stylobate six to the column and one to the entablature.

The Greek Doric order is without a base the shaft of the column springs from the top step and tapers towards the top the outline being not however straight but of a subtle curve known technically as the entasis of the column. This shaft is channelled with twenty shallow channels the ridges separating one from another being

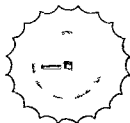


FIG. 53.—PLAN OF A GREEK DORIC COLUMN.



FIG. 54.—THE FLUTES OF A GREEK DORIC CAPITAL.

whole is most skilfully designed to convey the idea of sturdy support and yet to clothe the support with grace. The strong proportions of the shaft, the slight curve of its outline, the lines traced upon its surface by the channels, and even the vigorous uncompromising planting of it on the square step from which it springs all contribute to make the column look strong. The check given to the vigorous upward lines of the channels on the shaft by the first sinkings, and their arrest at the point where the capital spreads out intensified as it is by the series of

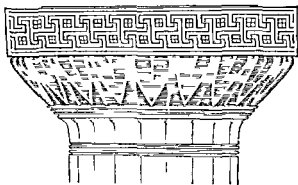


FIG. 60.—CAPITAL OF A GREEK DORIC COLUMN FROM EGINA
WITH COLOURED DECORATION

horizontal lines drawn round the echinus by the fillets cut into it all seem to convey the idea of spreading the supporting energy of the column outwards and the abacus appears naturally fitted itself inert to receive a burden placed upon it and to transmit its pressure to the capital and shaft below.

The entablature which formed the superstructure consisted first of a square marble beam—the architrave which it may be assumed represents a square timber

beam that occupied the same position in the prima

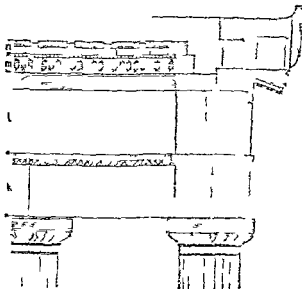


FIG. 81.—SECTION OF THE ENTABLATURE OF THE AKROPOLIS IN THE DORIC ORDER.



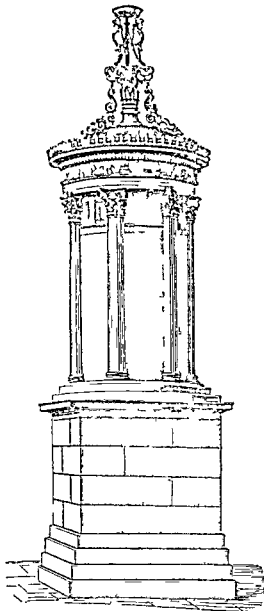


FIG. 78.—MONUMENT TO LYS CHATES AT ATRIS, AS IN THE TIME OF PERICLES.

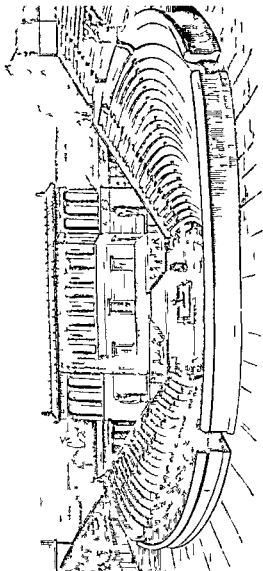


FIG 10.—[RESTITUTION OF THE GREEK THEATRE OF SEGESTA

richly sculptured brackets seem to have been introduced and a profusion of ornament was employed. The examples of this treatment which remain are however of Roman origin rather than Greek.

The Greek cities must have included structures of great beauty and adapted to many purposes of which in most cases few traces, if any have been preserved. We have no remains of a Greek palace or of Greek dwelling houses, although those at Pompeii were probably erected and decorated by Greek artificers for Roman occupation. The agora of a Greek city which was a place of public assembly something like the Roman Forum is known to us only by descriptions in ancient writers but we possess some remains of Greek theatres and from these and the Roman examples and written descriptions can understand what these buildings were. The auditory was curved in plan occupying rather more than a semicircle the seats rose in tiers one behind another a circular space was reserved for the chorus in the centre of the seats, and behind it was a raised stage bounded by a wall forming its back and sides a rough notion of the arrangement can be obtained from the lecture theatre of many modern colleges and our illustration (Fig. 80) gives a general idea of what must have been the appearance of one of these structures. Much of the detail of these buildings is however a matter of pure speculation and consequently does not enter into the scheme of this manual.

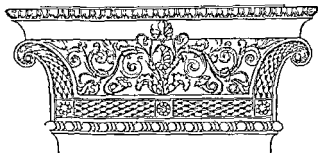


FIG. 81.—CAPITAL OF ANTEF IN MELEUS

CHAPTER VII

GREEK ARCHITECTURE

Analysis

a magnificent garble of pillars and so makes a grand structure, the first hint or suggestion being in all probability to be found in certain small Egyptian buildings to which reference has already been made. The disposition of these columns and of the great range of steps, or stylobate is the most marked feature in Greek temple plans. Columns also existed it is true, in the interior of the building, but these were of smaller size, and seem to have been introduced to aid in carrying the roof and the clerestory, if there was one. They have in several instances disappeared and there is certainly no ground for supposing that in any Greek interior the grand but oppressive effect of a hypostyle hall was attempted to be reproduced. That was abandoned together with the complication, seclusion and gloom of the long series of chambers cells &c placed one behind another, just as the contrasts and surprises of the series of courts and halls following in succession were abandoned for the one simple but grand mass built to be seen from without rather than from within. In the greater number of Greek buildings a degree of precision is exhibited to which the Egyptians did not attain. All right angles are absolutely true the setting-out (or spacing) of the different columns piers openings &c is perfectly exact and in the Parthenon the patient investigations of Mr Penrose and other skilled observers have disclosed a degree of accuracy as well as refinement which resembles the precision with which astronomical instruments are adjusted in Europe at the present day rather than the rough and ready measurements of a modern mason or bricklayer.

What the plans of Greek palaces might have exhibited did any remains exist is merely matter for inference and conjecture and it is not proposed in this volume to

constituted a most powerful and most stable influence, always present,—always, comparatively speaking, within reach,—and always the same. Of all the forms of column and capital existing in Egypt the Greeks, however, only selected that straight-sided fluted type of which the Beni Hassan example is the best known, but by no means the only instance. We first meet with these fluted columns at Corinth of very sturdy proportions, and having a wide, swelling, clumsy moulding under the abacus by way of a capital. By degrees the proportions of the shaft grew more slender, and the profile of the capital more elegant and less bold, till the perfected perfections of the Greek Doric column were attained. This column is the original to which all columns with moulded

The Ornaments

Greek Ornaments have exerted the same wide influence over the whole course of Western art as Greek columns, and in their origin they are equally interesting as specimens of Greek skill in adapting existing types, and of Greek invention where no existing types would serve.

Few of the mouldings of Greek architecture are to be traced to anterior styles. There is nothing like them in Egyptian work, and little or nothing in Assyrian, and though a suggestion of some of them may no doubt be found in Persian examples, we must take them as having been substantially originated by Greek genius, which felt that they were wanted, designed them, and brought them far towards absolute perfection. They were of the most refined form, and when enriched were carved with consummate skill. They were executed in white marble—a material having the finest surface and capable of responding to the most delicate variations in contour by corresponding changes in shade or light in a manner and to a degree which no other material can equal. In the Doric mouldings were few,

what they found ready to their hand when they began to use it, but they refined it, at the same time losing no whit of its vigour or effectiveness and the honeysuckle has come to be known as a typical Greek decorative motif (3) ACANTHUS (Figs 84 and 85) This is a broad leaved plant, the foliage and stems of which treated in a conventional manner though with but little departure from nature were found admirably adapted for floral decorative work and accordingly were made use of in the foliage of the Corinthian capital, and in such ornaments as for example the great finial which forms the summit of the Choragic Monument of Lysicrates



FIG. 84—THE ACANTHUS LEAF AND STALK

to occupy spaces that were respectively triangular square or continuous. In the later and more voluptuous style of the Ionic temples we find sculpture made into an architectural feature as in the famous statues known as the Caryatides which support the smallest portico of the Erechtheum and in the enriched columns of the Temple of Diana at Ephesus. Sculpture had already been so employed in Egypt and was often so used in later times but the best opportunity for the display of the finest qualities of the sculptor's art is such an one as the pediments &c. of the great Doric temples afforded.

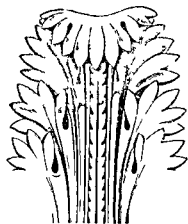


FIG. 65.—THE ACANTHUS LEAF

There is little room for doubting that all the Greek temples were richly decorated in colours but traces and indications are all that remain these however are sufficient to prove that a very large amount of colour was employed and that probably ornaments (Figs 105 to 120) were painted upon many of those surfaces which were left plain by the mason especially on the cornices and that mosaics (Fig 87) and coloured marbles and even gilding were freely used. There is also ground for believing that as the use of carved enrichments increased with the increasing adoption of the Ionic and Corinthian styles less use was made of painted decorations.

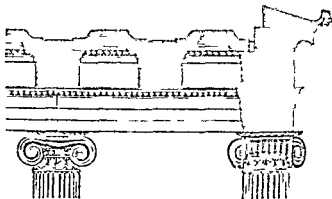


FIG. 84.—NORTH PORTICO OF THE ERECHTHEION

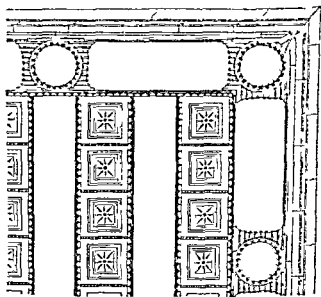


FIG. 85.—PLAN OF THE PORTICO—LOOKING UP

EXAMPLES OF GREEK ORNAMENT

IN THE NORTHERN PORTICO OF THE ERECHTHEION—SHOWING THE ORNAMENTATION OF THE CEILING

ecture did not possess. Repetition ruled to the almost entire suppression of variety. Disclosure of the arrangement and construction of the building was almost complete, and hardly a trace of concealment can be detected. Simplicity reigns in the earliest examples, the elaboration of even the most ornamental is very chaste and graceful, and the whole effect of Greek architecture is one of harmony, unity, and refined power.

A general principle seldom pointed out which governs the application of enrichments to mouldings in Greek architecture may be cited as a good instance of the subtle yet admirable concord which existed between the different features: it is as follows. *The outline of each enrichment in relief was ordinarily described by the same line as the profile of the moulding to which it was applied.* The egg enrichment (Fig 91) on the ovolo the water leaf on the cyma reversa (Figs 92 and 97) the honeysuckle on the cyma recta (Fig 94) and the gulloche (Fig 100) on the torus are examples of the application of this rule—one which obviously tends to produce harmony.

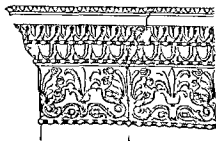


FIG 90—CAPITAL OF IONIC FROM THE ERECHEION



FIG. 92.—EGG AND DART



FIG. 93.—LEAF AND DART

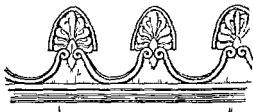


FIG. 94.—H. KTSCHER.



FIG. 96.—H. KTSCHER.



FIG. 98.—ACANTHUS.



FIG. 99.—ACANTHUS.

EXAMPLES OF GREEK ORNAMENT IN RELIEF



FIG. 105—H. NEYBUCKEL.



FIG. 96

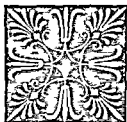


FIG. 97—HONEY CREEK.



FIG. 100

FIGS. 96, 97, 100—FACT WITH IDEAS OF FOLIAGE



FIG. 98



FIG. 99—LEAF AND DART



FIG. 102—EGG AND DART



FIG. 103

EXAMPLES OF GREEK ORNAMENT IN COLOUR



FIG 11

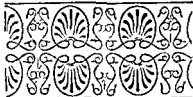
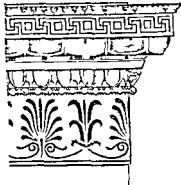


FIG 12



FIG 113.



F

FIG 115—G
LOCHE.

FIGS 11 TO 13—EXAMPLES OF THE HONEY COMB

FIG 114.—COMBINATION OF THE FIRST THE EGG AND DART THE BEAD
AND FILLET AND THE HONEY COMB.

FIG 116



FIG 117



FIG 118

FIGS 116 TO 120—EXAMPLES OF THE FIRST
EXAMPLES OF GREEK ORNAMENT IN COLOUR



FIG. 11.—ELEVATION OF AN ETRUSCAN TEMPLE (RESTORED FROM DESCRIPTIONS ONLY).

CHAPTER VIII

ETRUSCAN AND ROMAN ARCHITECTURE

Historical and General Sketch

THE few grains of truth that we are able to sift from the mass of legend which has accumulated round the early history of Rome seem to indicate that at a very early period—which the generally received date of 753 B.C. may be taken to fix as nearly as is now possible—a small band of outcasts and marauders settled themselves on the Palatine Hill and commenced to carry on depredations against the various cities of the tribes whose territories were in the immediate neighbourhood such as the Umbrians Sabines Samnites Latins and Etruscans. A walled city was built which from its admirable situation succeeded in attracting inhabitants in considerable

numbers and speedily begin to exercise supremacy over its neighbours. The most important of the neighbouring nations were the Etruscans who called themselves *Tyrsenai* and who must have settled on the west coast of Italy, between the rivers Arno and Tiber at a very early period. Their origin is however very obscure some authorities believing upon apparently good grounds that they came from Asia Minor, while others assert that they descended from the north over the Rhaetian Alps. But whatever that origin may have been they had at the time of the founding of Rome as a city attained a high degree of civilisation and showed a considerable amount of architectural skill and their arts exercised a very great influence upon Roman art.

Considerable remains of the city walls of several Etruscan towns still exist. These show that the masonry was of what has been termed a Cyclopean character—that is to say the separate stones were of an enormous size, in the majority of examples these stones were of a polygonal shape, though in a few instances they were rectangular while in all cases they were fitted together with the most consummate accuracy of workmanship which, together with their great massiveness has enabled much of this masonry to endure to the present day. Cortona Volterra, Tiesole and other towns exhibit instances of this walling. The temples palaces or dwelling houses which went to make up the cities so fortified have all disappeared and the only existing structural remains of Etruscan buildings are tombs. These are found in large numbers and consist—as in the earlier instances which have already been described—both of rock cut and detached erections. Of the former the best known group is at Castel d'Asso where we find not only chambers cut into the rock, each

resembling an ordinary room with an entrance in the face of the rock but also monuments cut completely out and standing clear all round and we cannot fail to detect in the forms into which the rock has been cut,

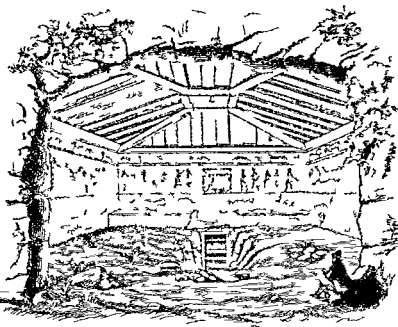


FIG. 172.—SEPIELCHER AT CORNETO.

especially those of the roof imitations of wooden buildings heavy square piers being left at intervals supporting longitudinal beams which hold up the roof Fig. 172 is an illustration of the interior of a chamber in the rock. Occasionally there were a cornice and pediment over the entrance

stones still exists in many places with not a stone displaced as a proof of the skill of these early builders. There are remains of an aqueduct at Tusculum which are interesting from the fact of the horizontal being combined with the true arch in its construction.

No Etruscan temples remain now, but we know from Vitruvius that they consisted of three cells with one or more rows of columns in front the intercolumniation or interval between the columns being excessive. The

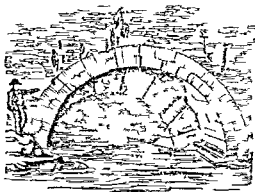


FIG. 113.—CIVITAS MAXIMA.

largest Etruscan temple of which any record remains was that of Jupiter Capitolinus at Rome which under the Empire became one of the most splendid temples of antiquity. It was commenced by Tarquinius Superbus and is said to have derived its name from the fact of the builders when excavating the foundations coming upon a freshly bleeding head (*capit*) indicating that the place would eventually become the chief city of the world. Another form of Etruscan temple is described by Vitruvius.

never been surpassed and exhibiting in their decorations traces of both Greek and Egyptian influence

We now reach the last of the classical styles of antiquity, the Roman,—a style which however, is rather an adaptation or amalgamation of other styles than an original and independent creation or development. The contrast is very great between the “lively Grecian” imaginative and idealistic in the highest degree—who seemed to have an innate genius for art and beauty and who was always eager to perpetuate in marble his ideal conception of the hero from whose loins he sprung, or to immortalise with some splendid work of art the name of his mother city—and the stern practical Roman realistic in his every pore, eager for conquest and whose one dominant idea was to bring under his sway all the nations who were brought into contact with him, and to make his city—as had been foretold—the capital of the whole world. With this idea always before him it is no wonder that such a typical Roman as M. Porcius Cato should look with disdain upon the fine arts in all their forms and should regard a love for the beautiful whether in literature or art, as synonymous with effeminacy. Mummius, also, who destroyed Corinth, is said to have been so little aware of the value of the artistic treasures which he carried away, as to stipulate with the carriers who undertook to transport them to Rome that if any of the works of art were lost they should be replaced by others of equal value.

When the most prominent statesmen displayed such indifference it is not surprising that for nearly 2000 years no single trace of any architectural building of any merit at all in Rome can now be discovered, and that history is silent as to the existence of any monuments worthy of

as interesting as its great scientific and structural advance upon all preceding styles. In the earlier styles temples, tombs and palaces were the only buildings deemed worthy of architectural treatment. But under the Romans baths, theatres, amphitheatres, basilicas, aqueducts, triumphal arches &c. were carried out just as elaborately as the temples of the gods.

It was under the Emperors that the full magnificence of Roman architectural display was reached. The famous boast of Augustus that he found Rome of brick and left her of marble, gives expression in a few words to what was the great feature of his reign. Succeeding emperors lavished vast sums on buildings and public works of all kinds and thus it comes to pass that though the most destructive of all agencies, hostile invasions, conflagrations and long periods of neglect have each in turn done their utmost to destroy the vestiges of Imperial Rome, there still remain fragments and in one or two instances whole monuments enough to make Rome after Athens the richest store of classic architectural antiquities in the world.

But it was not in Rome only that great buildings were erected. The whole known civilised world was under Roman dominion and wherever a centre of government or even a flourishing town existed there sprang up the residences of the dominant race and their places of business, public worship and public amusement. Consequently we find in our own country and in France, Spain, Germany, Italy, North Africa and Egypt—in short in all the countries where Roman rule was established—examples of temples, amphitheatres, theatres, triumphal arches and dwelling houses, some of them of great interest and occasionally in admirable preservation.

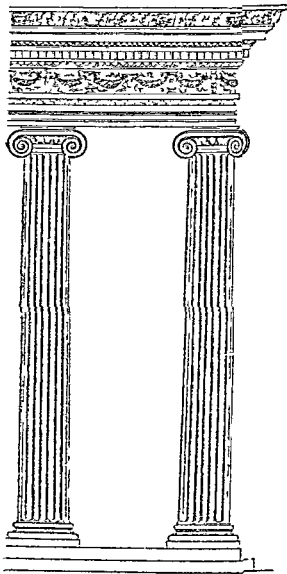


FIG. 123.—IONIC ORDER FROM THE TEMPLE OF FORTUNA VARIAN 2 INCH.

other temples exist in Rome, but in some of the Roman provinces far finer specimens of temples remain of which perhaps the best is the *Maison Carrée* at Nîmes (Fig 126). Here we find the Roman plan of a single cell and a deep portico in front, while the sides and rear have the columns attached. The intercolumniations and the details of the capitals and entablature are, however almost pure Greek. The date of this temple is uncertain but it is most probable that it was erected during the reign of Hadrian. The same emperor is said to have completed the magnificent Temple of Jupiter Olympus at Athens which was 354 ft long by 171 ft wide. It consisted of a cell flanked on each side by a double row of detached columns. In front was one row of columns in antis and three other rows in front of these while there were also three rows in the rear. As the columns were of the Corinthian order and nearly 60 ft in height it may be imagined that it was a splendid edifice.

The ruins of another magnificent provincial Roman temple exist at Baalbek—the ancient Heliopolis—in Syria not far from Damascus. This building was erected during the time of the Antonines probably by Antoninus Pius himself and originally it must have been of very extensive dimensions the portico alone being 180 ft long and about 37 ft deep. This gives access to a small hexagonal court on the western side of which a triple gateway opens into the Great Court which is a vast quadrangle about 450 ft long by 400 ft broad with ranges of small chambers or niches on three sides some of which evidently had at one time beautifully gabled roofs. At the western end of this court on an artificial elevation stand the remains of what is called the Great Temple. This was originally 290 ft long by 160 ft

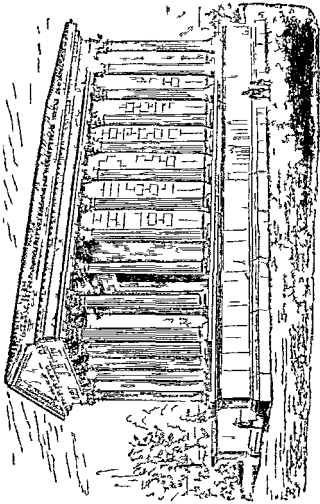


FIG. 135.—FOMAX-QUINTUS AN IYFIF N AT NI ES (MA NOK-CA OF J. P. ORA Y OF T E ME OF HADRAV

wide and had 54 columns supporting its roof six only of which now remain erect. The height of these columns including base and capital is 75 ft., and their diameter is 7 ft at base and about 6 ft 6 in at top, they are of the Corinthian order and above them rises an elaborately moulded entablature, 14 ft in height. Each of the columns is composed of three stones only, secured by strong iron cramps, and indeed one of the most striking features of this group of buildings is the colossal size of the stones used in their construction. The quarries from which these stones were hewn are close at hand and in them is one stone surpassing all the others in magnitude its dimensions being 68 ft 1 y 14 ft 2 in by 13 ft 11 in. It is difficult to imagine what means can have existed for transporting so huge a mass the weight of which has been calculated at 1100 tons.

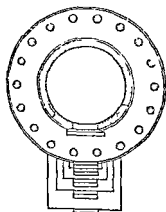


FIG. 12.—GROUND-PLAN OF THE TEMPLE OF VESTA AT TIVOLI

Other smaller temples exist in the vicinity all of which are lavishly decorated but on the whole the

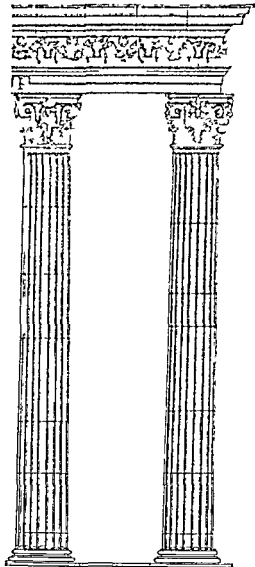


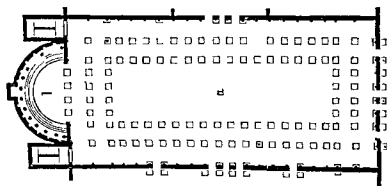
FIG. 128.—CORINTHIAN ORDER FROM THE TEMPLE OF VESTA AT TIVOLI

at Tivoli (Fig 122) form a well known and pleasing variety of the Corinthian order, and the circular form of the building as shown on the plan (Fig 127) gives excellent opportunities for good decorative treatment, as may be judged of by the enlarged diagram of part of the peristyle (Fig 129)

Basilicas

Among the most remarkable of the public buildings of Roman times, both in the mother-city and in the provinces, were the Basilicas or Halls of Justice, which were also used as commercial exchanges. It is also believed that Basilicas existed in some Greek cities, but no clue to their structural arrangements exists and whence originated the idea of the plan of these buildings we are unable to state, their striking similarity to some of the rock-cut halls or temples of India has been already pointed out. They were generally (though not always) covered halls, oblong in shape divided into three or five aisles by two or more rows of columns, the centre aisle being much wider than those at the sides. Over the latter galleries were frequently

Pauli the Basilica Sempronia erected in B.C. 169 by Tib Sempronius Gracchus and the Basilica Julia erected by Julius Caesar, B.C. 46. All these buildings had wooden roofs and were of no great architectural merit and they perished at a remote date. Under the Empire, basilicas of much greater size and magnificence were erected, and remains of that of Trajan otherwise called the Basilica Ulpia have been excavated in the Forum of Trajan. This was about 360 ft long by 180 ft. wide had four rows



101230—GROUND-PLAN OF THE BASILICA ULPIA ROME.

of columns inside and is supposed to have been covered by a semicircular wooden roof. Apollodorus of Damascus was the architect of this building. Another basilica of which remains exist is that of Maxentius which after his overthrow by Constantine in A.D. 312 was known as the Basilica Constantiniana. This structure was of stone and had a vaulted roof. It was 195 ft between the walls and was divided into three aisles by piers with enormous columns standing in front of them.

One provincial basilica that at Trèves still stands and although it must have been considerably altered it

is by far the best existing example of this kind of building. The internal columns do not exist here, and it is simply a rectangular hall about 175 ft by 80 ft with the usual semicircular apse.

The chief interest attaching to these basilicas lies in the fact that they formed the first places of Christian assembly, and that they served as the model upon which the first Christian churches were built.

Theatres and Amphitheatres

Although dramas and other plays were performed in Rome as early as 240 B.C., there seems to have been a strong prejudice against permanent buildings for their representation as it is recorded that a decree was passed in B.C. 154 forbidding the construction of such buildings. *Mummius the conqueror of Corinth* obtained permission to erect a wooden theatre for the performance of dramas as one of the shows of his triumph and after this many buildings of the kind were erected, but all of a temporary nature and it was not till B.C. 61 that the first permanent theatre was built by Pompey. This and the theatres of Balbus and Marcellus, appear to have been the only permanent theatres that were erected in Imperial Rome, and there are no remains of any but the last of these and this is much altered. So that were it not for the remains of theatres found at Pompeii, it would be almost impossible to tell how they were arranged, but from these we can see that the stage was raised and separated from the part appropriated to the spectators by a semicircular area much like that which in Greek theatres was allotted to the chorus in the Roman ones this was assigned for the use of the *sena*

tors. The portion devoted to the spectators—called the *Cavea*—was also semicircular on plan, and consisted of tiers of steps rising one above the other, and divided at intervals by wide passages and converging staircases communicating with the porticoes, which ran round the whole theatre at every story.

At Orange, in the South of France, are the remains of a very fine theatre, similar in plan to that described. The

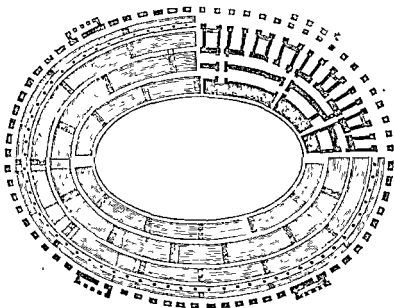


FIG. 131.—PLAN OF THE COLISEUM, ROME.

great wall which formed the back of the scene in this building is still standing, and is one of the most magnificent pieces of masonry existing.

Although the Romans were not particularly addicted

to dramatic representations, yet they were passionately fond of shows and games of all kinds hence not only in Rome itself but in almost every Roman settlement, from Silchester to Verona are found traces of their amphitheatres and the mother-city can claim the possession of

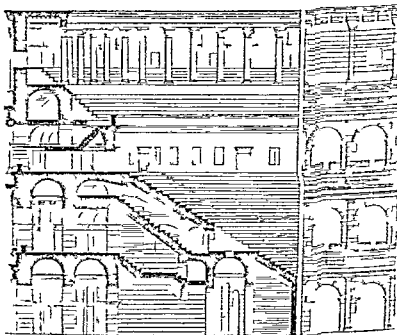


FIG. 132.—THE COLOSSEUM SECTION AND ELEVATION

the most stupendous fabric of the kind that was ever erected—the Colosseum or Flavian Amphitheatre which was commenced by Vespasian and finished by his son Titus. An amphitheatre is really a double theatre with

out a stage, and with the space in the centre unoccupied by seats. This space, which was sunk several feet below the first row of seats was called the arena, and was appropriated to the various exhibitions which took place in the building. The plan was elliptical or oval, and this shape seems to have been universal.

The Colosseum, whose ruins still remain to attest its pristine magnificence—

“ Arches on arches as it were that Rome,
Collecting the chief trophies of her line
Would build up all her triumphs in one dome *—

was 620 ft long and 513 wide and the height was about 162 ft. It was situated in the hollow between the Esquiline and Calian hills. The ranges of seats were admirably planned so as to enable all the audience to have a view of what was going on in the arena, and great skill was shown both in the arrangement of the approaches to the different tiers and in the structural means for supporting the seats and double corridors ran completely round the building on each floor, affording ready means of exit. Various estimates have been made of the number of spectators that could be accommodated, and these range from 50,000 to 100,000, but probably 80,000 was the maximum. Recent excavations have brought to light the communications which existed between the arena and the dens where the wild animals and human slaves and prisoners were confined, and some of the water channels used when mimic sea fights were exhibited. The external façade is composed of four stories, separated by entablatures that run completely round the building without a break. The three lower stories consist of a series of semicircular arched openings, eighty

in number, separated by piers with attached columns in front of them, the Doric order being used in the lowest story, the Ionic in the second, and the Corinthian in the third, the piers and columns are elevated on stylobates, the entablatures have a comparatively slight projection, and there are no projecting keystones in the arches. In the lowest range these openings are 13 ft 4 in wide, except the four which are at the ends of the two axes of the ellipse, and these are 14 ft 6 in wide. The diameter of the columns is 2 ft 8 $\frac{1}{4}$ in. The topmost story, which is considerably more lofty than either of the lower ones, was a nearly solid wall enriched by Corinthian pilasters. In this story occur two tiers of small

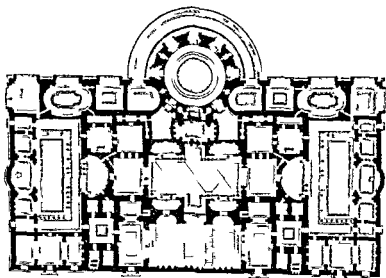
Agrippa built the first public baths and 324 A.D., when those of Constantine were erected no less than twelve of these vast establishments were erected by various emperors and bequeathed to the people. Of the whole number, the baths of Caracalla and of Diocletian are the only ones which remain in any state of preservation and these were probably the most extensive and magnificent of all. All these splendid buildings were really nothing more than bribes to secure the favour of the populace, for it seems quite clear that the public had practically free entrance to them the only charge mentioned by writers of the time being a quadrans about a farthing of our money. Gibbon says 'The meanest Roman could purchase with a small copper coin the daily enjoyment of a scene of pomp and luxury which might excite the envy of the kings of Asia. And this language is not exaggerated. Not only were there private bath rooms swimming baths hot baths, vapour baths and in fact all the appurtenances of the most approved Turkish baths of modern times but there were also gymnasia halls for various games lecture-halls, libraries, and theatres in connection with the baths all lavishly ornamented with the finest paintings and sculpture that could be obtained. Stone seems to have been but sparingly used in the construction of these buildings, which were almost entirely of brick faced with stucco this served as the ground for an elaborate series of fresco paintings.

The baths of Caracalla, at the foot of the Aventine hill erected A.D. 217, comprised a quadrangular block of buildings of about 1150 ft. (about the fifth of a mile) each way. The side facing the street consisted of a portico the whole length of the façade behind which were numerous ranges of private bath rooms. The side and rear blocks contained

numerous halls and porticoes the precise object of which it is now very difficult to ascertain. As Byron says

"Temples halls or halls?
I honour ee who can"

This belt of buildings surrounded an open courtyard or garden in which was placed the principal bathing establishment (Fig. 133) a building 730 ft by 380 ft, which



cell From the ruins of these baths were taken some of the most splendid specimens of antique sculpture, such as the Farnese Hercules and the Flora in the Museum of Naples

The baths of Diocletian erected just at the commencement of the fourth century A D, were hardly inferior to those of Caracalla but modern and ancient buildings are now intermingled to such an extent that the general plan of the buildings cannot now be traced with accuracy There are said to have been over 3000 marble seats in these baths, the walls were covered with mosaics and the columns were of Egyptian granite and green Numidian marble The Ephebeum, or grand hall still exists as the church of Santa Maria degli Angeli having been restored by Michelangelo It is nearly 300 ft long by 90 ft wide, and is roofed by three magnificent cross

which we have left. The building which forms the church of Santa Maria al Martyres has been considerably altered at various times since its erection and now consists of a rotunda with a rectangular portico in front of it. The

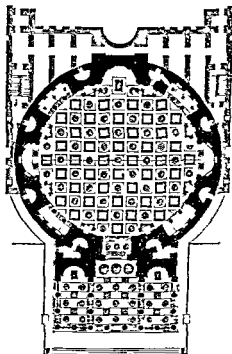


FIG. 135.—THE PANTHEON, ROME. GROUND-PLAN

rotunda was most probably erected by Agrippa the son-in-law of Augustus in B.C. 27 and is a most remarkable instance of clever construction at so early a date. The

diameter of the interior is 143 ft 6 in., and the height to the top of the dome is 147 ft. In addition to the entrance, the walls are broken up by seven large niches, three of which are semicircular on plan, and the others, alternating with them, rectangular. The walls are divided

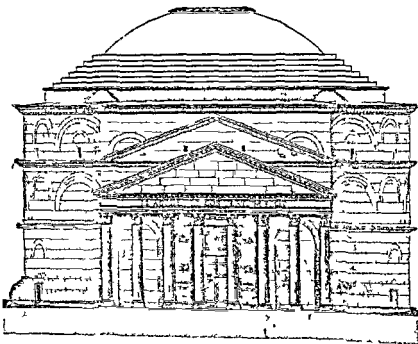


FIG 136—THE PANTHEON IN ROME. EXTERIOR.

into two stories by an entablature supported by columns and pilasters, but although this is now cut through by the arches of the niches, it is at least probable that originally this was not the case, and that the entablature

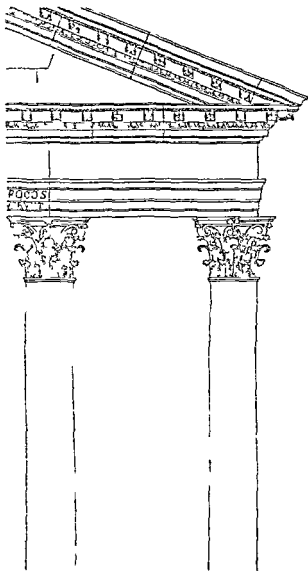


FIG. 13 — 1 x C. BENTLEY'S O. IN FROM T. S. J. AUSTIN'S I.

design a magnificence in the material employed and a quiet harmony in the illumination, that impart to the interior a character of sublimity which nothing can impair. The rectangular portico was added at some subsequent period, and consists of sixteen splendid Corinthian columns (Fig 13~) eight in front supporting the pediment and the other eight dividing the portico into three bays, in precisely the same way as if it formed the pronaos to the three cells of an Etruscan temple.

monuments very similar to triumphal arches. There remain also smaller monuments of the same character such as the so-called Arch of the Goldsmiths in Rome (Fig. 1).

Columns were erected in great numbers during the time of the Emperors as memorials of victory. Of these the Column of Trajan and that of Marcus Aurelius are the finest. The former was erected in the centre of Trajan's Forum, in commemoration of the Emperor's victory over the Dacians. It is of the Doric order, 132 ft. 10 in. high including the statue. The shaft is constructed of thirty-four pieces of marble joined with bronze cramps. The figures on the pedestal are very finely carved and the entire shaft is encircled by a series of elaborate bas-reliefs winding round it in a spiral from its base to its capital. The beauty of the work on this shaft may be best appreciated by a visit to the cast of it set up—in two heights unfortunately—at the South Kensington Museum. The Column of Marcus Aurelius generally known as the

crowned with a colossal statue of the Emperor. The tomb of Hadrian on the banks of the Tiber—now known as the Castle of Sant Angelo—was even more magnificent. This comprised a square base 75 ft high the side of which measured about 340 ft. Above this was a cylindrical building surmounted by a circular peristyle of thirty-four Corinthian columns. On the top was a quadriga with a statue of the Emperor. These mausolea were occasionally octagonal or polygonal in plan surmounted by a dome and cannot fail to remind us of the Etruscan tumuli.

Another kind of tomb of less magnificence was the columbarium which was nothing more than a subterranean chamber the walls of which had a number of small apertures in them for receiving the cinerary urns containing the ashes of the bodies which had been cremated. In the eastern portion of the Empire in rocky districts the tombs were cut in the rock and the facade was elaborately decorated with columns and other architectural features.

of the house, it was an open court, roofed in on all the four sides, but open to the sky in the centre. The simplest form was called the Tuscan atrium, where the roof was simply a lean to sloping towards the centre, the rafters being supported on beams, two of which rested on the walls of the

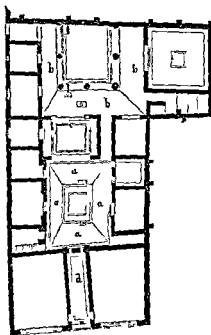


FIG. 141.—GROUND-PLAN OF THE HOUSE OF THE TRAGIC POET, POMPEII.

atrium and had two other cross beams trimmed into them. The central opening was called the *impluvium* and immediately under it a tank, called the *compluvium*, was formed in the pavement to collect the run water (Fig. 142). When the atrium became larger, and the roof had to be

of the house, it was an open court roofed in on all the four sides but open to the sky in the centre. The simplest form was called the Tuscan atrium where the roof was simply a lean to sloping towards the centre the rafters being supported on beams two of which rested on the walls of the

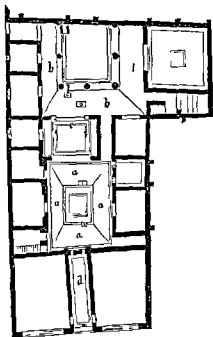


FIG. 141.—GROUND PLAN OF THE HOUSE OF THE TRAGIC POET, POMPEII.

atrium and had two other cross beams trimmed into them. The centre opening was called the *impluvium* and immediately under it a tank called the *compluvium* was formed in the pavement to collect the run water (fig. 142). When the atrium became larger and the roof had to be

supported by columns, it was called a *caradum* *. At the end of this apartment were three others, open in front, the

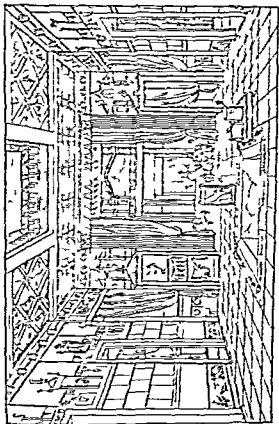


FIG. 112.—PLAN OF A ROMAN TRICLINIUM

largest, in the centre, called *tablinum*, and the two side ones

* Vitruvius, however, seems to use the terms *atrium* and *caradum* as quite synonymous

alæ,* these were muniment-rooms, where all the family archives were kept, and their position is midway between the semi-public part of the house, which lay towards the front, and the strictly domestic and private part, which lay in the rear. At the sides of the atrium in the larger houses were placed small rooms, which served as sleeping chambers.

From the end of the atrium a passage, or sometimes two passages called the *fauces*, running by the side of the tablinum, led to the *peristylum*,† which was the grand private reception room, this also was a court open to the sky in the centre, and among the wealthy Romans its roof was supported by columns of the rarest marbles. Round the peristyle were grouped the various private rooms which varied according to the size of the house and the taste of the owner. There was always one dining room (*triclinium*) and frequently two or more, which were arranged with different aspects, for use in different seasons of the year. If several dining rooms existed, they were of various sizes and decorated with various degrees of magnificence. and a story is told of one of the most luxurious Romans of Cicero's time, that he had simply to tell his slaves which room he would dine in for them to know what kind of banquet he wished to be prepared. In the largest houses there were saloons (*æci*), parlours (*exedrae*), picture galleries (*pinacothecæ*) chapels (*lararia*), and various other apartments. The kitchen, with scullery and bakehouse attached, was generally placed in one angle of the peristyle, round which various sleeping chambers according to the size of the house, were arranged. Most of the rooms appear to have been on the ground floor, and probably depended for their light upon the

* Marked respectively c, and f, f, on the plan of the House of Pansa.
 † Marked b, l, on the plans.

doorway only though in some instances at Pompeii small windows exist high up in the walls

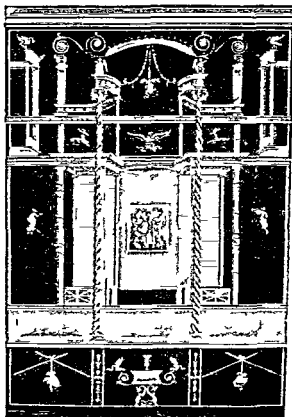


FIG. 142—WALL DECORATION FROM POMPEII.

In the extreme rear of the larger houses there was generally a garden and in those which were without this

the deal walls in the rear were frequently painted so as to imitate a garden. The houses of the wealthy Romans were decorated with the utmost magnificence—marble columns, mosaic pavements, and charming pieces of sculpture adorned their apartments and the walls were in all cases richly painted (fig. 143) being divided into panels in the centre of which were represented sometimes human figures, sometimes landscapes and sometimes pictures of historical events. All the decoration of Roman houses was internal only. The largest and most sumptuous mansion did little to distinguish it next the street, from a comparatively humble abode and, with the exception of the space required for the vestibule and entrance doorway, nearly the whole of the side of the house next the street was most frequently appropriated to shops. All that we are able to learn of the architecture of Roman private houses, whether from contemporary descriptions or from the uncovered remains of Pompeii and Herculaneum,* points to the fact that it, even in a greater measure than the public architecture, was in no sense of indigenous growth but was simply a copy of Greek arrangement and Greek decoration.

* At the Crystal Palace can be seen an interesting reproduction of a Roman house, which was designed by the late Sir Digby Wyatt. It gives a very faithful reproduction of the arrangement and the size of an average Roman house and though every part is rather more fully covered with decoration than was usual in the originals, the decorations of each room faithfully reproduce the treatment of some original in Pompeii or Herculaneum.



FIG. 111.—CARVING IN THE PORCH OF VESTA, ROME.

CHAPTER X.

ROMAN ARCHITECTURE.

Analysis

THE *Plan* (or *floor-disposition*)—The plans of Roman buildings are striking from their variety and the vast extent which in some cases they display as well as from a certain freedom, mastery and facility of handling which are not seen in earlier work. Their variety is partly due to the very various purposes which the buildings of the Romans were designed to serve—these comprised all to which Greek buildings had been appropriated and many others, the product of the complex and luxurious civilisation of the Empire. But independent of this circumstance the employment of such various forms in the plans of buildings as the ellipse, the circle and the octagon and their facile use seem to denote a people who could build rapidly and who looked carefully to the general masses and outlines of what they built; however carelessly they handled the minute details. The freedom with which these new forms were employed

arises partly also from the fact that the Romans were in possession of a system of construction which rendered them practically independent of most of the restrictions which had fettered the genius of the Egyptians Assyrians and Greeks. Their vaulted roofs could be supported by a comparatively small number of piers of great solidity, placed far apart, and accordingly in the great halls of the Thermæ and elsewhere we find planning in which a few stable points of support being secured, the outline of the spaces between them is varied at the pleasure of the architect in the most picturesque and pleasing manner.

The actual floor received a good deal of attention from the Romans. It was generally covered with tessellated pavement often with mosaic and its treatment entered into the scheme of the design for most interiors.

The Walls

The construction of these was essentially different from that adopted by most earlier nations. The Romans rather avoided than cultivated the use of large blocks of stone, they invented methods by which very small materials could be aggregated together into massive and solid walls. They used mortar of great cementing power so much so that many specimens of Roman walling exist in this country as well as in Italy or France where the mortar is as hard as the stones which it unites. They also employed a system of binding together the small materials so employed by introducing at short distances apart, courses of flat stones or bricks called *boulevours* and they further fortified such walls by bands of flat materials placed edgewise after the manner popularly known as *herring bone work*. The result of these methods of construction was

that the Roman architect could build anywhere no matter how unpromising the materials which the locality afforded that he could put the walls of his building together without its being requisite to employ exclusively the skilled labour of the mason and that both time and expense were thus saved. This economy and speed were not pushed so far as to render the work anything but durable they had however a bad effect in another direction for these rough rubble walls were habitually encased in some more slightly material, in order to make them look as though they were something finer than they really were and accordingly the exterior was often faced with a thin skin of masonry and not infrequently plastered. The interior was also almost invariably plastered but to this little exception can be taken. This casing of the exteriors was however the beginning of a system of what may be called false architecture and one which led to much that was degrading to the art.

The walls were in many cases it has been already observed gathered into strong masses such as it is customary to term piers in order to support the vaulted roofs at the proper points. They were often carried to a much greater height than in Greek buildings and they played altogether a far more important part in the design of Roman buildings than they had done in that of the Greeks.

unapproached before for size and splendour, and such as have hardly been surpassed since, except by the vaulted churches of the Middle Ages—buildings which are themselves descended from Roman originals. The art of vaulting was, in short, the key to the whole system of Roman architecture, just as the Orders were to that of the Greeks.

The well known arch over the Cloaca Maxima at Rome (Fig 123, p 142) may be taken as an illustration of the most ancient and most simple kind of vault the one which goes by the significant name of ‘barrel or waggon head vault.’ This is simply a continuous arched vault springing from the top of two parallel walls, in fact like the arch of a railway tunnel. Such a vault may be constructed of very great span and affords a means of putting a permanent roof over a floor the outline of which is a parallelogram but it is heavy and uninteresting in appearance. It was soon found to be possible to introduce a cross vault running at right angles to the original one, and where such an intersecting vault occurs the side walls of the original vault may be dispensed with for so much of their length as the newly added vault spans.

The next step was to introduce a succession of such cross vaults close to one another, so that large portions of the original main wall might be dispensed with. What remained of the side walls was now only a series of oblong masses or piers suitably fortified so as to carry the great weight resting upon them but leaving the architect free to occupy the space between them as his fancy might dictate, or to leave it quite open. In this way were constructed the great halls of the *Thermae*, and the finest halls of modern classic architecture—such, for example, as the *Madeleine* at Paris, or *St George's Hall* at Liverpool—are only a

compressed and crowded up and by no means elegant in fact both this and the Doric order were decidedly deteriorations from the fine forms of Greek architecture

The Corinthian order was much more in accordance with the later Roman taste for magnificence and display and hence we find its use very general both in Rome and in other cities of the Empire Its proportions did not greatly differ from those of the Greek Corinthian but the mouldings in general were more elaborate Numerous variations of the capital exist (Figs 145 145a) but the principal one was an amalgamation of the large Ionic volutes in the upper with the acanthus leaves of the lower



FIG. 45.—ROMAN CORINTHIAN CAPITAL AND BASE FROM THE TEMPLE OF VESUVIUS AT TIVOLI

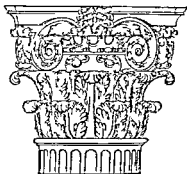


FIG. 145a.—THE ROMAN COMPOSITE CAPITAL.

portion of the capital this is known as the Composite order and the capital thus treated has a strength and vigour which was wanting to the Greek order (see Fig 145a)

The shafts of the columns were more often fluted than not though sometimes the lower portion was left plain and the upper only fluted. The Attic base was generally used, but an example has been found of an adaptation of the graceful Persepolitan base to the Corinthian column. This was the happiest innovation that the Romans made, it seems however, to have been but an individual attempt and, as it was introduced very shortly before the fall of the Empire, the idea was not worked out.

The orders thus changed were employed for the most part as mere decorative additions to the walls. In many cases they did not even carry the eaves of the roof, as they always did in a Greek temple and it was not uncommon for two three or more orders to be used one above another marking the different stories of a lofty building.

The columns or pilasters which took their place, being reduced to the humble function of ornaments added to the wall of a building it became very usual to combine them with arched openings and to put in arch in the interspace between two columns or in other words to add a column to the pier between two arches (Fig. 146). These arched openings being often wide a good deal of disproportion between the height of the columns and their distance apart was liable to occur, and partly to correct this the column was often mounted upon a pedestal, to which the name of "stylobate" has been given.

It was also sometimes customary to place above the order, or the highest order where more than one was employed what was termed an attic—a low story ornamented with piers or pilasters. The exterior of the Colosseum (Fig. 5), the triumphal arches of Constantine (Fig. 139) and Titus, and the fragments of the upper part

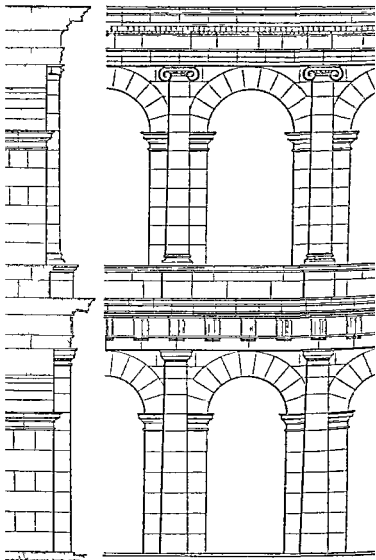


FIG 146—PART OF THE THEATRE OF MARCELLUS, ROME. SHOWING THE COMBINATION OF CONCRETE AND ARCHED OPENINGS.

of the Forum of Nerva (Fig 147) may be consulted as illustrations of the combination of an order and an arched opening and of the use of pedestals and attics

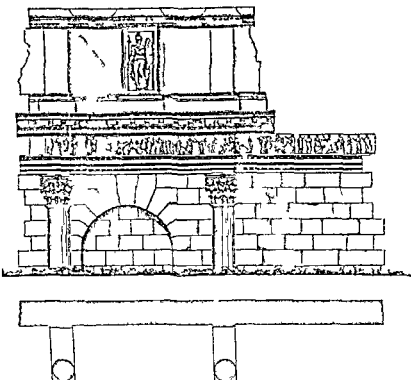


FIG 147—FROM THE REMAINS OF THE FORUM OF NERVA, ROME, SHOWING THE USE OF AN ATTIC STORY WITH PLAN

Another peculiarity of which we give an illustration from the baths of Diocletian (Fig 148) was the surmounting a column or pilaster with a square pillar of stone, moulded in the same way as an entablature *i.e.* with the regular division into architrave, frieze, and cornice. This was a

decided perversion of the use of the order it occurs in examples of late date. So also do various other arrangements for making an arch spring from the capital of a column one of these from the palace of Diocletian at Spalatro we are able to illustrate (Fig 149)

In conclusion it may be worth while to say that the Roman writers and architects recognised five orders the Tuscan Doric Ionic Corinthian and Composite the first and last in this list being however really only vari-

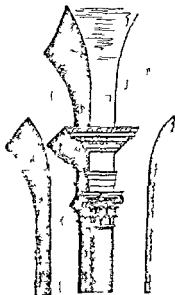


FIG 148. FRAGMENTARY ENTABLATURE AT THE STARTING OF PART OF A VAULT

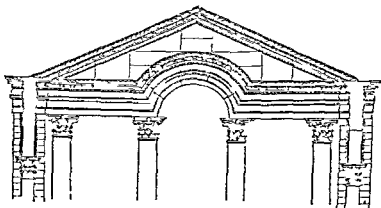


FIG 149.—FROM THE PALACE OF DIOCLETIAN SPALATRO SHOWING AN ARCH SPRINGING FROM A COLUMN

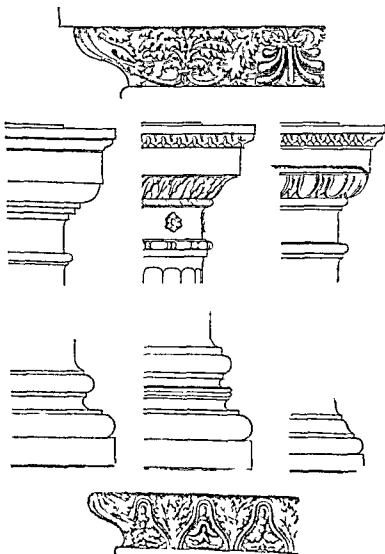


FIG. 10.—MOLDINGS AND ORNAMENTS FROM THE ROMAN BUILDINGS

circles, instead of being more subtle curves, and the result is that violent contrasts of light and shade are obtained, telling enough at a distance, but devoid of interest if the spectator come near.

Carving is executed exactly on the same principles as those which govern the mouldings—that is to say, with much more coarseness than in Greek work, not lacking

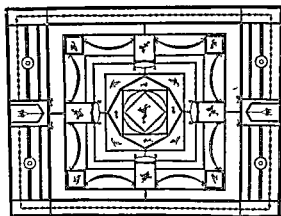


FIG. 153.—WALL DECORATION OF (SO-CALLED) ARABESQUE CHARACTER FROM POMPEII

in vigour, or in a sort of ostentatious opulence of ornament, but often sadly deficient in refinement and grace.

Statues, many of them copies of Greek originals generally executed with a heavy hand but sometimes clearly of Greek work were employed as well as bronzes, inlaid marbles, mosaics and various devices to ornament the interiors of Greco-Roman buildings and free use was made of ornamental plaster work both on walls and vaults.

Coloured decoration was much in vogue, and, to judge

from what has come down to us, must have been executed with great taste and much spirit. The walls of a Roman dwelling house of importance seem to have been all painted partly with that light kind of decoration to which the somewhat inappropriate name of arabesque has been given and partly with groups or single figures relieved by dark or black backgrounds. The remains of the Palace of the Cæsars in Rome much of it not now accessible and the decorations visible at Pompeii give a high idea of the skill with which this mural ornamentation was executed, our illustration (Fig 154) may be taken as affording a good example of the combined decorations in relief and colour often applied to vaulted ceilings.

It is however characteristic of the lower level at which Roman art stood as compared with Greek that though statues abounded we find no traces of groups of sculpture designed to occupy the pediments of temples or of bas-reliefs fitted to special localities in

are thus sometimes tempted to regret that it was not possible to combine a higher degree of refinement with

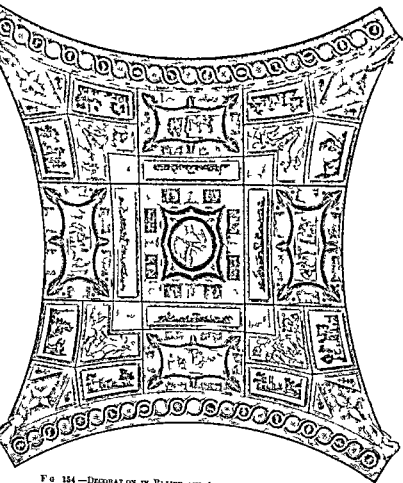


FIG. 154.—DECORATION IN RELIEF AND COLOUR OF THE VAULT OF A TOMB IN THE VIA LATINA, NEAR ROME.

the great excellence in construction and contrivance exhibited by Roman architecture

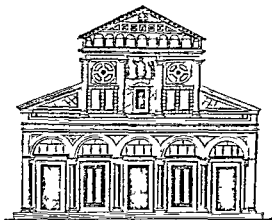


FIG. 135.—BASILICA CHURCH OF SAN MINIATO FLORENCE.

CHAPTER VI

EARLY CHRISTIAN ARCHITECTURE

and made it the religion of the State. It then, of course, became requisite to provide places of public worship. Probably the Christians would have been, in many cases, reluctant to make use of heathen temples, and few temples, if any, were adapted to the assembling of a large congregation. But the large halls of the baths and the basilicas were free from associations of an objectionable character, and well fitted for large assemblages of worshippers. These and other such places were accordingly, in the first instance employed as Christian churches. The basilica however, became the model which, at least in Italy, was followed, to the exclusion of all others when new buildings were erected for the purpose of Christian worship, and during the fourth century, and several succeeding ones, the churches of the West were all of the basilica type. What occurred at Constantinople the seat of the Eastern Empire and the centre of the Eastern Church, will be considered presently.

There is probably no basilica actually standing which was built during the reign of Constantine or near his time, but there are several basilica churches in Rome such as that of San Clemente which were founded near his time, and which though they have been partially or wholly rebuilt exhibit what is believed to be the ancient disposition without modification.

Access is obtained to San Clemente through a fore court to which the name of the atrium is given. This is very much like the atrium of a Roman house, being covered with a shed roof round all four sides and open in the centre and so resembling a cloister. The side next the church was called the narthex or porch, and when an atrium did not exist a narthex at least was usually pro-



FIG. 156.—INTERIOR OF A BASILICA AT POMPEII.
Restored, from descriptions by various authors.

vided. The basilica has always a central avenue, or nave and sides or aisles and was generally entered from the north by three doors one to each division. The nave of San Clemente is lofty, and covered by a simple wooden roof. It is separated from the side aisles by arcades, the arches of which spring from the capitals of columns, and high up in its side walls we find windows. The side aisles like the nave, have wooden roofs. The nave terminates in a semicircular recess called 'the apse' the floor of which is higher than that of the general structure, and is approached by steps. A large arch divides this apse from the nave. A portion of the nave floor is occupied by an enclosed space for the choir surrounded by marble screens, and having a pulpit on either side of it. These pulpits are termed *ambos*. Below the Church of San Clemente is a vaulted structure or crypt extending under the greater part but not the whole of the floor of the main building.

The description given above would apply, with very slight variations to any one of the many ancient basilical churches in Rome Milan Ravenna and the other older cities of Italy. The principal variations being that in many instances including the very ancient basilica of St Peter now destroyed the avenues all stopped short of the end wall of the basilica and a wide and clear transverse space or transept ran athwart them in front of the apse. San Clemente indeed shows some faint traces of such a feature. In one or two very large churches five avenues occur—that is to say a nave and double aisles, and in Santa Agnese (Fig 136A) and at least one other we find a gallery over the side aisles opening into the nave, or, as Mr Fergusson puts it, 'the side aisles in two stories'. In many instances we should find no atrium,

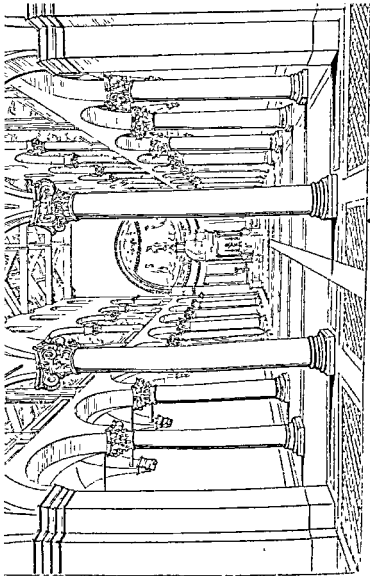


FIG. 196A.—BASILICA, OR EARLY CHRISTIAN CHURCH OF SANTA APOLLONIA AT ROME.

At St. Peter's in Rome, for example, the Pope occupies a throne in the middle of the apse, and says mass with his face turned towards the congregation at the high altar, his face turned towards the congregation at the high altar,

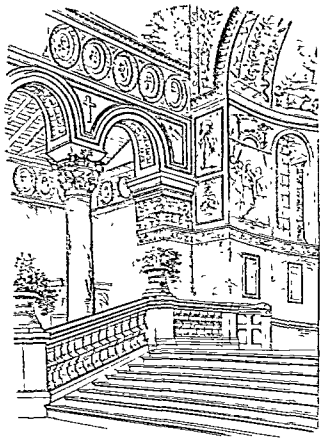


FIG. 157.—SANT' APOLLINARE, RAVENNA. PART OF THE ARCADE AND APSE.

which stands in front of his throne under a vast baldachino or canopy; but in Western Christendom generally a change has been made,—the altar has been placed in the

apse where the bishop's throne formerly stood and the throne of the bishop and stalls of his clergy have been displaced, and are to be found at the sides of the choir or presbytery.

Many basilica churches were erected out of fragments taken from older buildings and present a curious mixture of columns capitals &c., others, especially those at Ravenna, exhibit more care and are noble specimens of ancient and severe architectural work. The illustration which we give of part of the nave, arcade, and apse of one of these Sant Apollinare in Classe, shows the dignified yet ornate aspect of one of the most carefully executed of these buildings (Fig. 157).

In some of these churches the decorations are chiefly in mosaic and are extremely striking. Our illustration of the apse of the great basilica of St Paul without the walls (Fig. 158) may be taken as a fair specimen of the general arrangement and treatment of the crowd of sacred figures and subjects which it is customary to represent in these situations but it can of course convey no idea of the brilliant effect produced by powerful colouring executed



FIG. 152.—APSE OF THE BASILICA OF ST PAUL WITHOUT THE WALLS, ROME

baptistery This is commonly a detached building and almost always circular or polygonal In some instances the baptistery adjoins the atrium or forecourt but it soon became customary to erect detached baptisteries of considerable size These generally have a high central portion carried by a ring of columns and a low aisle running round the receptacle for water being in the centre The origin of these buildings is not so clear as that of the basilica churches they bear some resemblance to the Poman circular temples but it is more probable that the form was suggested by buildings similar in general arrangement and forming part of a Roman bath The octagonal building known as the baptistery of Constantine and the circular building now used as a church and dedicated to Santa Costanza in Rome and the celebrated baptistery of Pavia are early examples of this class of structure Somewhat more recent, and very well known are the great baptisteries of Florence and Pisa.

A few ancient circular or polygonal churches remain which do not appear to have been built as baptisteries. One of these is at Rome the church of San Stefano Rotondo but another more remarkable in every way is at Ravenna the church of San Vitale. This is an octagonal building with a large vestibule and a small apsidal choir The central portion carried by eight arches springing from as many lofty and solid piers, and surmounted by a hemispherical dome rises high above the aisle which surrounds it Much elegance is produced by the arrangement of smaller columns so as to form a kind of apsidal recess in each of the interspaces between the eight main piers

Another feature which has become thoroughly identified with church architecture is the bell tower or campanile

This appendage, there can be no doubt originated with the basilicas of Italy. The use of bells as a call to prayer is said to have been introduced not later at any rate, than the sixth century, and to this era is attributed a circular campanile belonging to Sant' Apollinare in Classe at Ravenna, a basilica already alluded to. The circular plan was however, exceptional, the ancient campaniles remaining in Rome are all square. They are usually built of brick, many stories in height, and with a group of arched openings in each story, and are generally surmounted by a low conical roof.

The type of church which we have described influenced church architecture in Italy down to the eleventh century, and such buildings as the beautiful church (Fig. 100) of San Miniato, near Florence (A.D. 1013) and the renowned group of Cathedral, Baptistry, Campanile and Campo Santo (a kind of cloistered cemetery) at Pisa bear a very strong resemblance in many respects to these originals, though they belong rather to the Romanesque than to the Basilican division of early Christian architecture.

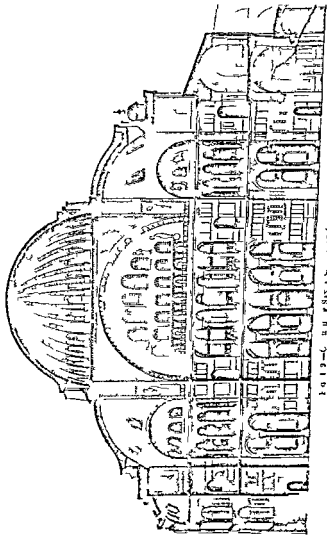


FIG. 19—C. U. H. V. S. A. N. A. AT C. O. S. T. N. T. U. E. I. O. S. T. O. V.
 FIG. 20—C. U. H. V. S. A. N. A. AT C. O. S. T. N. T. U. E. I. O. S. T. O. V.
 FIG. 21—C. U. H. V. S. A. N. A. AT C. O. S. T. N. T. U. E. I. O. S. T. O. V.

well defined style. The basis of this style may be said to be the adoption of the dome, in preference to the vault or the timber roof, as the covering of the space enclosed within the walls, with the result that the general disposition of the plan is circular or square rather than oblong and that the structure recalls the Pantheon more than the great Hall of the Thermæ of Diocletian or the Basilica of St Paul. In Santa Sophia one vast flattish dome dominates the central space. This dome is circular in plan and the space over which it is placed is a square the sides of which are occupied by four massive semicircular arches of 100 ft span each springing from four vast piers one at each of the four corners. The four triangular spaces between the corners of the square so enclosed and the circle or ring resting upon it are filled by what are termed pendentives — features which may perhaps be best described as portions of a dome each just sufficient to fit into one corner of the square and the four uniting at their upper margin to form a ring. From this ring springs the main dome. It rises to a height of 46 ft and is 107 ft in clear diameter. East and west of the main dome are two half domes each springing from a wall apsidal (*i.e.* semicircular) in plan. Smaller apses again domed over at a lower level are introduced and vaulted aisles two stories in height occupy the sides of the space within the outer walls till the outline of the building is brought to very nearly an exact square. Externally this church is uninteresting * but its interior is of surpassing beauty and can be better described in the eloquent language of Gilbert Scott† than in any other. Simple as

* For an illustration see Fig 18"

† Lectures on Medieval Architecture

Venice This cathedral was built between the years 977-1071, and it is said according to a design obtained from Constantinople. It has since been altered in external appearance by the erection of bulbous domical roofs over its domes and by additions of florid Gothic character but disregarding these we have alike in plan structure and ornament a Byzantine church of the first class.

The ground plan of St. Marks (Fig. 162) presents a Greek cross: i.e. one in which all the arms are equal and

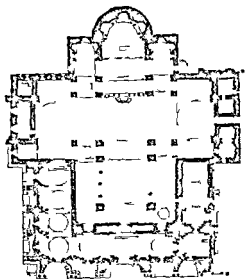


FIG. 162. PLAN OF S. MARKS, VENICE.

is roofed by five principal domes: one at the crossing, and one over each of the four limbs of the cross. Aisles at a low level and covered by a series of small flat domes in lieu of vaulting fill up the angles between the arms of the cross, so as to make the outline of the plan nearly square.

The rich colouring of St. Mark's due to a profuse employment of mosaics and of the most costly marbles, and the splendid effects produced by the mode of introducing light, which is admitted much as at Santa Sophia, are perhaps its greatest charm, but there is beauty in every aspect of its interior which has furnished a fit theme for the pen of the most eloquent writer on art and architecture of the present or perhaps of any day.

From Venice the influence of Byzantine art spread to a small extent in North Italy, in that city herself as well as in neighbouring towns such as Padua buildings and fragments of buildings exhibiting the characteristics of the style can be found. Remarkable traces of the influence of Byzantium as a centre, believed to be due to intercourse with Venice can also be found in France. Direct communication with Constantinople by way of the Mediterranean has also introduced Byzantine taste into Sicily. One famous French church, St Front in Perigueux is identical (or nearly so) with St Mark's in its plan, but all its constructive arches being pointed (Fig 3, page 5) its general appearance differs a good deal from that of Eastern churches—a difference which is accentuated by the absence of the mosaics and other coloured ornaments which enrich the walls of St Mark's. Many very old domed churches and much sculpture of the Byzantine type are moreover to be found in Central and Southern France—Anjou Aquitaine, and Auvergne. These are however, isolated examples of the style having taken root in spite of adverse circumstances, it is in those parts of Europe where the Greek Church prevails or did prevail that Byzantine architecture chiefly flourishes. In Greece and Asia Minor many ancient churches of Byzantine structure remain while in Russia churches are built to the

present day corresponding to the general type of those which have just been described.

In ancient buildings of Syria the influence of both the

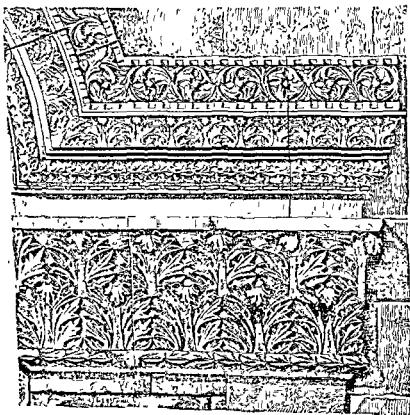


FIG. 163.—FROM THE GOLDEN DOOR OF JERUSALEM. TIME OF JUSTINIAN. A.D. 560

Roman and the Byzantine models can be traced. No more characteristic specimens of Byzantine foliage can be desired than some to be found in Palestine, as for ex-

seem to display a free and very original treatment based upon Roman more than Byzantine ideas. We illustrate the exterior of one of these the church at Turmanin (Fig 164). This is a building divided into a nave and aisles and with a vestibule. Two low towers flank the central gable and it will be noticed that openings of depressed proportion mostly semicircular headed and with the arches usually springing from square piers mark the building while the use made of columns strongly resembles the manner in which in later times they were introduced by the Gothic architects.



FIG. 65.—TOWER OF A RUSSIAN CHURCH.

CHAPTER VIII

ROMANESQUE ARCHITECTURE.

THE term Romanesque is here used to indicate a style of Christian architecture founded on Roman art which prevailed throughout Western Europe from the close of the period of basilican architecture to the rise of Gothic except in those isolated districts where the influence of Byzantium is visible. By some writers the significance of the word is restricted within narrower limits but excellent authorities can be adduced for the employment of it in the wide sense here indicated. In fact some difficulty exists in deciding what shall and what shall not be termed Romanesque, if any more restricted definition of its meaning is adopted while under this general term if applied broadly many closely allied local varieties—as, for example Lombard Rhénish, Romance Saxon and Norman—can be conveniently included.

The spectacle which Europe presented after the removal of the seat of empire to Byzantium and the incursions of the Northern tribes was melancholy in the extreme. Nothing but the church retained any semblance of organized existence and when at last some kind of order began to emerge from a chaos of universal ruin and churches and monastic buildings began to be built in Western Europe all of them looked to Rome and not to Constantinople as their common ecclesiastical centre. It is not surprising that as soon as differences between the ritual of the Eastern and the Western Church sprang up a contrast between Eastern and Western architecture should establish itself and that the early structures of

cular windows often occupy the gables and very frequently the walls have been built of or ornamented with coloured materials. The sculpture—grotesque vigorous and full of rich variety—which distinguishes many of these buildings and which is to be found specially enriching the doorways is of great interest and began early to develop a character that is quite distinctive.

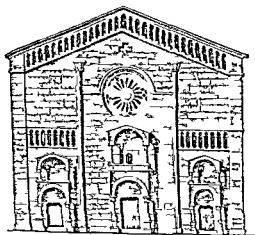


FIG. 16.—CATHEDRAL AT PÁEZ.

marked. The nave arcades generally sprang from piers (Fig 170), more rarely from columns. Arches are constantly met with recessed, i.e. in receding planes,* the first stage of progress towards a Gothic treatment, and are occasionally slightly moulded (Fig 171). Western doorways are often highly enriched with sculpture, and the carving and sculpture generally though often rude, are full of vitality. Towers occur, usually square, more rarely octagonal. Window-lights are frequently grouped two or more under one arch. Capitals of a basket shape, and with a square abacus, often richly sculptured, are employed.

In Normandy, and generally in the North of France, round-arched architecture was excellently carried out, and churches remarkable both for their extent and their great dignity and solidity were erected. Generally speaking, however, Norman architecture, especially as met with in Normandy itself, is less ornate than the

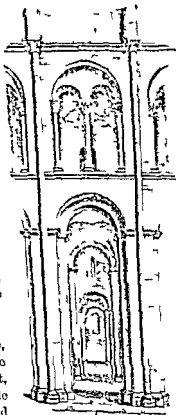


FIG 170.—NAVE ARCADE AT ST
SERENUS TOLL LSE.

* * Gothic and Renaissance Architecture, chap v p 62

Romanesque of Southern France; in fact some of the best examples seem to suffer from a deficiency of ornament.

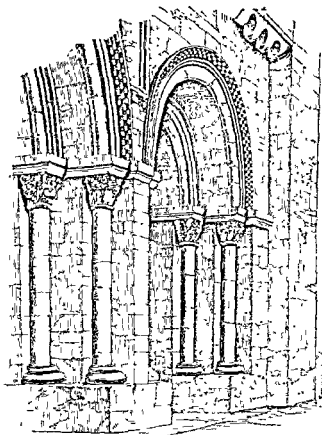


FIG. 171.—ARCHES IN RECEDING PLANES AT ST. SERGIS, TOULOUSE.

The large and well-known churches at Caen, St. Etienne, otherwise the Abbaye aux Hommes—interesting to English-

men as having been founded by William the Conqueror immediately after the Conquest—and the Trinité or Abbaye aux Dames are excellent examples of early Norman architecture but the student must not forget that alterations have been made to them which if they add to their beauty at the same time alter their character. For example in St. Etienne the upper part of the western towers and the fine spires with which they are crowned were built subsequent to the original structure as was also in all probability the chevet or eastern limb. It seems probable also that the vaulting may not be what was contemplated in the original plan.

St Etienne is 364 ft long and is lofty in its proportions. It has a nave and aisles arcades resting on piers and strongly marked transepts and has two western towers with the gable of the nave between them. The west front is well designed in three stories having strongly marked vertical divisions in the buttresses of the towers and equally distinct horizontal divisions in the three doorways below and two ranges of windows each of five lights above. There is no circular west window. The nave and aisles are vaulted.

Besides other cathedral churches such for example as those of Bayeux and Evreux in which considerable parts of the original structures remain there exist throughout Normandy and Brittany many parochial churches and monastic buildings exhibiting at least in some portions of their structure the same characteristics as those of St Etienne and it is clear that an immense number of buildings the beauty and even refinement of which are conspicuous must have been erected in Northern France during the eleventh and the early years of the twelfth centuries the period to which Norman architecture in France may be said to belong.

In Great Britain as has been already pointed out, enough traces of Saxon—that is to say, Primitive Romanesque—architecture remain to show that many simple though comparatively rude buildings must have been erected previous to the Norman Conquest. Traces exist also of an influence which the rapid advance that had been made by the art of building as practised in Normandy was exerting in our island. The buildings at Westminster Abbey raised by Edward the Confessor though they have been almost all rebuilt, have left just sufficient traces behind to enable us to recognise that they were of bold design. The plan of the Confessor's church was laid out upon a scale almost as large as that of the present structure. The monastic buildings were extensive. The details of the work were some of them refined and delicate and resembled closely those employed in Norman buildings at that time. Thus it appears that even had the Conquest not taken place no small influence would have been exerted upon buildings in England by the advance then being made in France. But instead of a gradual improvement being so produced, a sudden and rapid revolution was effected by the complete conquest of the country and its occupation by nobles and ecclesiastics from Normandy who enriched by the plunder of the conquered country were eager to establish themselves in permanent buildings.

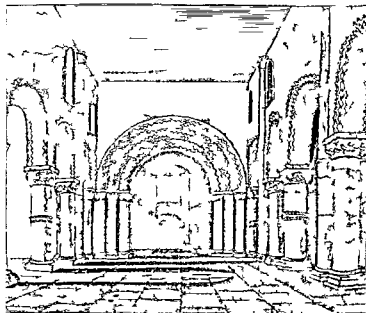
Shortly after the Conquest distinctive features began to show themselves. Norman architecture in England soon became essentially different from what it was in Normandy, and we possess in this country a large series of fine works showing the growth of this imported style from the early simplicity of the chapel in the Tower of London to such elaboration as that of the later parts of Durham Cathedral.

The number of churches founded or rebuilt soon after

the Norman Conquest must have been enormous for in examining churches of every date and in every part of England it is common to find some fragment of Norman work remaining from a former church this is very frequently a doorway left standing or built into walls of later date and in addition to these fragments no small number of churches and more than one cathedral together with numerous castles remain in whole or in part as they were erected by the original builders.

Norman architecture is considered to have prevailed in England for more than a century that is to say from the Conquest (1066) to the accession of Richard I (1189). For some details of the marks by which Norman work can be recognised the reader is referred to the companion volume * we propose here to give an account of the broader characteristics of the buildings erected during the prevalence of the style.

of ornament. A little more ornate and still a good example of early Norman is St Peter's Church, Northampton (Fig 172) the interior of which we illustrate. To these examples of early Norman we may add a large part of Rochester Cathedral and the transcripts of Winchester



fronts transepts and towers show great skill and care in their composition the openings being always well grouped, and contrasted with plain wall spaces, and a keen sense of proportion is perceptible. The Norman architects had at command a rich, if perhaps a rather rule ornamentation, which they generally confined to individual features especially doorways, on these they lavished mouldings and sculpture, the elaboration of which was set off by the plainness of the general structure. In the interior of the churches we usually meet with piers of massive proportion, sometimes round, sometimes octagonal sometimes rectangular and a shaft is sometimes carried up the face of the piers, as for example in Peterborough Cathedral (Fig 173). The capitals of the columns and piers have a square abacus and, generally speaking are of the cushion-shaped sort, commonly known as basket capitals, and are profusely carved. The larger churches have the nave roofed with a timber roof, and at Peterborough there is a wooden ceiling, in these cases the aisles only are vaulted, but in some small churches the whole building has been so covered. Buttresses are seldom required owing to the great mass of the walls when employed they have a very slight projection, but the same strips or pilasters which are used in German Romanesque occur here also. Low towers were common, and have been not unfrequently preserved in cases where the rest of the building has been removed. As the style advanced, the proportions of arcades became more lofty, and shafts became more slender, decorative arcades (Fig 174) became more common, and in these and many other changes the approaching transition to Gothic may be easily detected.

We have already alluded to the many Norman doorways remaining in parish churches of which all other parts have been rebuilt. These doorways are generally very

rich; they possess a series of mouldings sometimes

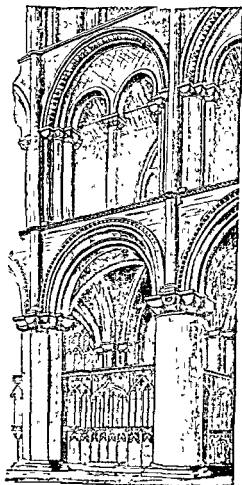


FIG. 173.—NAVE ARCADE, PETERBOROUGH CATHEDRAL.

springing from shafts, sometimes running not only round the arched head, but also up the jambs of the opening; and each moulding is richly carved, very often with a repetition of the same ornament on each voussoir of the arch. Occasionally, but not frequently, large portions of wall-surface are covered by a diaper; that is to say, an ornament constantly repeated so as to produce a general sense of enrichment.

Norman castles, as well as churches, were built in great numbers shortly

after the Conquest, and not a few remain. The stronghold which a follower of the Conqueror built in order to establish himself on the lands granted him was always a very sturdy massive square tower, low in proportion

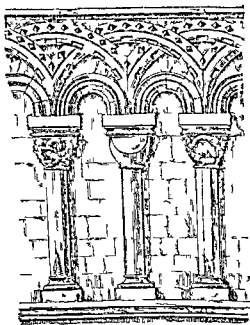


FIG. 174.—DECORATIVE ARCADE FROM CANTERBURY CATHEDRAL.

to its width built very strongly and with every provision for sustaining an attack or even a siege. Such a tower is called a keep and in many famous castles as for example the Tower of London the keep forms the nucleus round which buildings and courtyards of later date have clustered. In some few instances however as for example at Colchester the keep is the only part now

standing, and it is probable that when originally built these Norman castles were not much encumbered with outbuildings. Rochester Castle is a fine example of a Norman keep, though it has suffered much from decay and injury

Perhaps the best (and best preserved) example is Hed-
 ingham Castle in Essex, which we illustrate (Figs 175
 and 176) From the remains of this building some idea

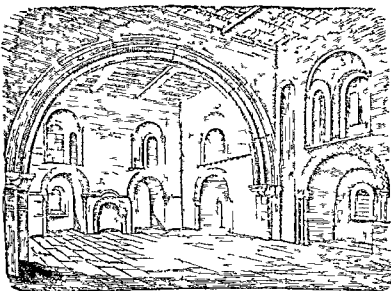


FIG. 176.—INTERIOR OF HEDDINGHAM CASTLE

of the interior of the hall—the chief room within a
 Norman keep—may be obtained as well as of the general
 external appearance of such a structure

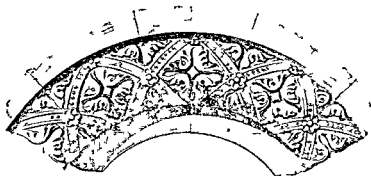


FIG. 117.—P ENDED ARCH OF CHURCH AT GELNHAUSEN

CHAPTER XIV

CHRISTIAN ROUND-ARCHED ARCHITECTURE

Analysis

NOTWITHSTANDING very wide differences which undoubtedly exist there is a sufficient bond of union between the Basilican, the Byzantine and the Romanesque styles to render it possible for us to include the characteristics of the three in an analysis of Christian round arched architecture

The Plan or floor-disposition of the basilican churches, as has been pointed out was distinctive. The atrium or forecourt the porch the division into nave and aisles, the transept, the great arch and the apse beyond it with the episcopal seat at the back behind the altar, the ambos, and the enclosure for the choir were typical features. Detached towers sometimes occurred. The plan

of Romanesque churches was based upon that of the basilica, the atrium was often omitted so was the transept sometimes, but when retained, the transept was generally much more prominent than in the basilica. The position of the altar and of the enclosure for the choir were changed

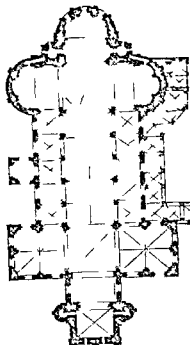


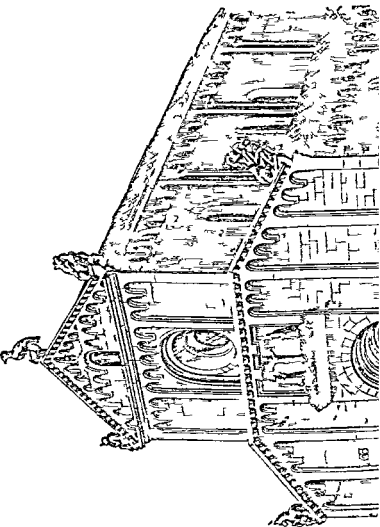
FIG 178—PLAN OF THE CHURCH OF THE APOSTLES AT COLOGNE

but in other respects the basilica plan was continued. In Germany however apsidal transepts (Fig 178) were built. Towers were common occasionally detached but more frequently joined to the main building.

Circular and polygonal buildings for use as baptisteries

and sometimes as churches existed both in the basilican and the Romanesque time

Byzantine church plans are all distinguished by their great central square space covered by the central dome flanked usually by four arms comparatively short and all of equal length and the plan of the buildings is generally square or nearly so in outline. Circular and polygonal buildings sometimes occur



pierced so as to supply any additional light required so that windows are infrequent in the lower walls. Broadly speaking therefore the Western churches have side lighting and the Eastern top-lighting.

The great arches which carry the main domes form a notable feature in Eastern churches and are of very bold construction. In the basilican churches one great arch called the arch of triumph occurs and only one this gives access to the apse and a similar arch which we now denominate the chancel arch usually occupies a corresponding position in all Romanesque churches. The arches of the arcade separating the nave from the aisles in all Western churches are usually of moderate span. In some ancient basilicas these arches are replaced by a horizontal beam.

The Columns—In basilicas these were of antique type very often they had actually been obtained by the demolition of older buildings and when made purposely they were as a rule of the same general character. The same might be said of those introduced into Byzantine buildings though a divergence from the classic type soon manifested itself and small columns began to appear as decorative features. In Romanesque buildings the columns are very varied indeed and shafts are frequently introduced into the decoration of other features. They occur in the jambs of doorways with mouldings or sub-arches springing from them long shafts and short ones frequently supporting ornamental arcades, are employed both internally and externally and altogether that use of the column as a means of decoration of which Gothic architecture presents so many examples first began in the Romanesque style.

The capitals employed in Romanesque buildings gene

rally depart considerably from the classic type being based on the primitive cubic capital (Fig 181) but, as a rule,

in Eastern as well as in basilican churches they bear a tolerably close resemblance to classic ones.

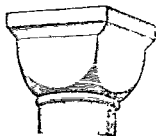


FIG. 181.—CUBIC CAPITAL.

The Ornaments throughout the whole of the Christian round-arched period are a very interesting subject of study, and will repay close attention. In the basilican style mouldings occur but seldom where

met with they are all of the profiles common in Roman architecture, but often rudely and clumsily worked. Carving partakes also of classic character, though it is not difficult to detect the commencement of that metamorphosis which was effected in Byzantium, and which can hardly be better described than in the following paragraph from the pen of Sir Digby Wyatt — The foliage is founded on ancient Greek rather than on Roman traditions, and is characterised by a peculiarly sharp outline. All ornamental sculpture is in comparatively low relief, and the absence of human and other figures is very marked. Enrichments were almost invariably so carved by sinking portions only of the surfaces and leaving the arrises and principal places untouched, as to preserve the original constructive forms given by the mason (Fig 184). The employment of the drill instead of the chisel, so common in debased Roman work, was retained as a very general practice by the Greek carvers and very often with excellent effect. The foliage of the acanthus, although imitated from the antique, quite

changed its character becoming more geometrical and conventional in its form. That which particularly distinguishes Lombard from Byzantine art is its sculpture abounding with grotesque imagery, with illustrations of every-day life of a fanciful mythology not yet quite extinct and allusions, no longer symbolic but direct to the Christian creed the latter quality a striking evidence of the triumph of the Roman Church over all iconoclastic aheresies in Greece. What is here asserted of Lombard carving is true of that in the Romanesque buildings in Germany Scandinavia (Fig 182) France and to a certain extent in Great Britain, though in our own country a large proportion of the ornamental carving consists simply of decorative patterns such as the chevron billet and zig zag and sculpture containing figures and animals is less common.



FIG 182.—DOORWAY AT TENDRWAY
(END OF 1ST CENT. A.)

The mouldings of Romanesque buildings are simple and at first were few in number but by degrees they become more conspicuous and before the transition to Gothic they

assumed considerable importance (Fig 183) and added not a little to the architectural character of the buildings.

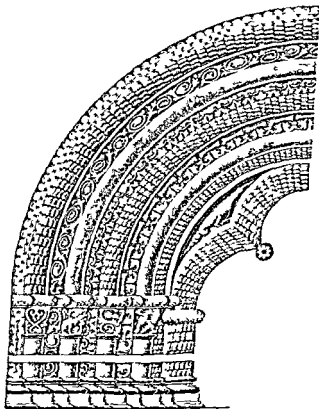


FIG 183.—Mouldings of Portal of St James's Church at Horsfield

Coloured decoration, especially in mosaic was a conspicuous feature in basilican churches, and still more so in those of the Byzantine style such decoration in

Romanesque churches was not infrequent but it was more commonly painted in fresco or tempera. The glass mosaic work to be found on the walls of Early Christian churches both basilican and Byzantine but less frequently Romanesque is most interesting and beautiful. It was says the high authority already quoted employed only to represent and reproduce the forms of existing objects such as figures architectural forms and conventional foliage which were generally relieved with some slight indication of shading upon a gold ground—the whole being bedded in the cement covering the walls and vaults of the basilicas and churches.

The design of both figures and ornaments was generally speaking very rude though not without an occasional rising in some of the figures to a certain sublimity derivable principally from the great simplicity of the forms and draperies and the earnest grandiose expression depicted on their countenances. The pieces of glass employed in the formation of this work are very irregular in shapes and sizes of all colours and tones of colour and the ground tint almost invariably prevailing is gold. The manner of execution is always large and coarse and rarely approaches in neatness of joint and regularity of bedding to the (ancient Roman) *opus majus vermiculatus* yet notwithstanding these blemishes the effect of gorgeous luxurious and at the same time solemn decoration produced is unattainable by any other means as yet employed as structural embellishment. How noble and truly ecclesiastical in character are the gold clad interiors of Monreale Cathedral of the Capella Palatina at Palermo of St Mark at Venice San Miniato at Florence or Santa Apollinare and Vitale at Ravenna the concurrent testimony of all travellers attests.

A finer kind of glass mosaic arranged in geometrical patterns was made use of to enrich the ambros screens episcopal chairs sepulchral ornaments and other similar fittings of churches and was often of great beauty. A third sort of mosaic—the Alexandrine work (*opus Alexandrinum*) used for pavements has been already alluded to this was extremely effective but its use appears to have been less general than that of the glass mosaics for the walls.

The Architectural Character of the basilican churches may be briefly characterised as venerable and dignified but yet cheerful and bright rather than forbidding they are as interiors impressive but not oppressive solemn but not gloomy. Comparatively little attention was paid to external effect and there is not often much in them to strike the passer by. The character of Byzantine interiors is far more rich and even splendid but it is more gloomy and often is solemn and grand to the last degree. In many cases these churches possess fine exteriors and for the level sky line produced by the long straight roofs of the basilica a more or less pyramidal composition showing curved outlines rather than straight ones is substituted. The architectural character of the Romanesque buildings varies extremely with the districts in which they are erected but generally speaking it may be described as picturesque and even sometimes romantic the appearance of towers prominent transepts and many smaller decorative features serves to render the exteriors telling and varied though often somewhat rude and primitive. A solid and somewhat heavy character distinguishes the interiors of some varieties of Romanesque buildings—such for example as our own Early Norman but in our fully developed and late Norman and still more in the latest

German Romanesque churches, this disappears almost entirely and much beauty and even lightness of effect is obtained without any loss of that richness which is characteristic of more ancient examples

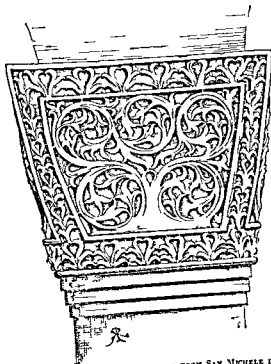


FIG 184.—BYZANTINE BASKETWORK CAPITAL FROM SAN MICHELE IN AFRICISCO
AT RA ENNA



FIG 185.—ARABESQUE CAPITAL. FROM THE ALHAMBRA

CHAPTER XV

MOHAMMEDAN ARCHITECTURE.

FEW revolutions more sudden more signal and more widespread are recorded in history than that which covered not only the East but part of the West with the Mohammedan religion and dominion. Mohammed was born either in the year 569 or 570 of the Christian era, and died A.D. 632. The year of the Hegira the era from which Mohammedans compute their chronology is A.D. 622 and within little more than a century from this era the Prophet was acknowledged, and the suzerainty of the Caliph recognised eastwards in Arabia Syria Palestine Egypt, and Persia and in India as far as to the Ganges and westwards along the north coast of Africa in Sicily and in Spain. It was only to be expected that such a wonderful tide of conquest and such a widespread change

of religion should before long leave its impress on the architecture of the continents thus revolutionised, and accordingly a Mohammedan style soon rose. This style did not displace or override the indigenous art of the various countries where it prevailed, as Roman architecture did in the age of universal dominion under the Empire, it assimilated the peculiarities of each country, and so transmuted them, that although wherever the religion of Mohammed prevails the architecture will at a glance confess the fact, still the local or national peculiarities of each country remain prominent.

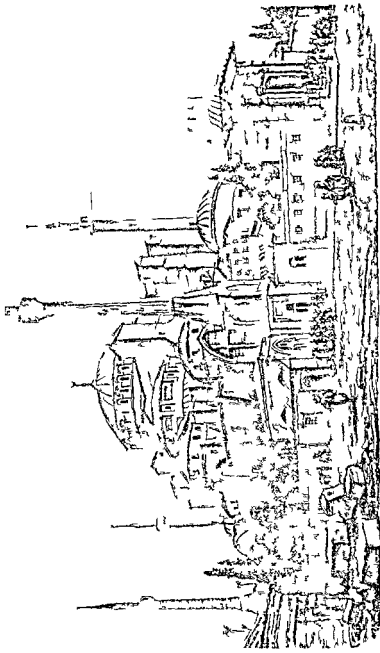
The Arabs, a nomadic race who lived in tents, do not seem to have been great builders even in their cities. We have no authentic accounts or existing remains of very early buildings even in Mecca or Medina, as the oldest mosques in those cities have been completely rebuilt. It is to Egypt and Syria that we must turn for the most ancient remaining examples of Saracenic architecture. These consist of mosques and tombs.

Egypt

A mosque—or Mohammedan place of worship—has two forms. The earlier mosques are all of them of a type the arrangement of which is simplicity itself. A large open courtyard, resembling the garth of a cloister, with a fountain in it, is surrounded cloister-wise by arcades supporting timber roofs. On the side nearest Mecca the arcades are increased to several rows in depth, so as to cover a considerable space. This is the part in which the congregation chiefly assembles, here a niche or recess (termed *Kibla*) more or less enriched, is formed in which the Koran is to be kept, and read by a pulpit

is erected. For many centuries past though not it is believed from the very earliest times a minaret or high tower from the top of which the call to prayer is given, has also been an indispensable adjunct to a mosque

The second sort of mosque is a domed and sometimes vaulted building of a form chiefly suggested by the Byzantine domed churches with a central space and four short arms. This sort of mosque became almost universal in Turkey and Egypt after the capture of Constantinople by the Turks and the appropriation to Moslem worship of Santa Sophia itself. The tombs are ornate and monumental



181—ENTER R OF SANTA SOP A CO T TWO F S OWL G T E SARETS ADDED AFTER 25 C OVERS ON INTO A MOSQ E.

materials obtained from older buildings, exhibits pointed arches, not only in the arcades, which probably have been rebuilt since they were originally formed but in the outer walls which are likely, in part at least, to be original.

Whatever uncertainty may rest upon these very remote specimens of pointed architecture, there is little if any about the Mosque of Ibn Tulun, also at Cairo, and built A D 825 or, according to another authority, A D 879. Here arcades of bold pointed arches spring from piers, and the effect of the whole structure is noble and full of character. From that time the pointed arch was constantly used in Saracenic buildings along with the

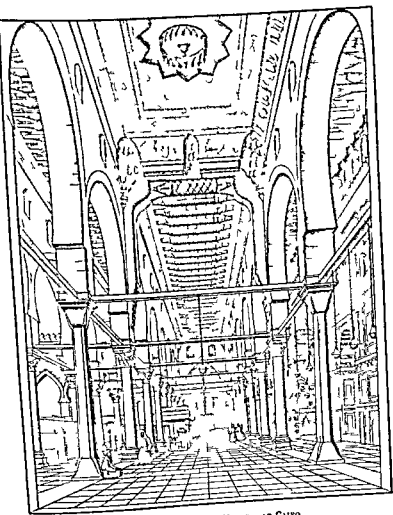


FIG 189 — MOSQUE EL MOYED AT CAIRO

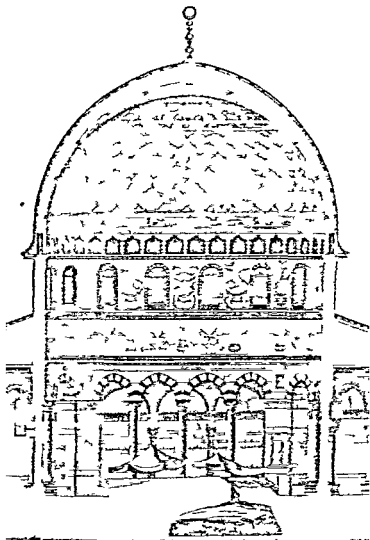


FIG. 172.—SECTION OF THE SAFFRA KHWA AT JEDDAH.

Seville and the Mosque at Cordova The Giralda is a square tower in fact a minaret on a magnificent scale, divided into panels and richly decorated and shows a masculine though beautiful treatment wholly different from that of the minarets in Cairo The well known Mosque at Cordova is of the simplest sort of plan but of very great extent and contains no less than nineteen parallel avenues separated from one another by arcades at two heights springing from 850 columns The Kibla in this mosque is a picturesque domed structure higher than the rest of the building The columns employed throughout are antique ones from other buildings but the whole effect of the structure which abounds with curiously cusped arches and coloured decoration is described as most picturesque and fantastic

Persia and India

Turning eastwards we find in Turkey as has been said a close adherence to the forms of Byzantine architecture In Persia where the people are now fire worshippers the Mohammedan buildings are mostly ruined and probably many have disappeared but enough remains to show that mosques and palaces of great grandeur were built Lofty doorways are a somewhat distinctive feature of Persian buildings of this style and the use of coloured tiles of singular beauty for linings to the walls in the heads of these great portals and in other situations to which such decoration is appropriate is very common these decorations afford opportunity for the Persian instinct for colour, probably the truest in the whole world to make itself seen

In India the wealth of material is such that an almost unlimited series of fine buildings could be brought forward were space and illustrations available A large part of that vast country became Mohammedan, and in the

buildings erected for mosques and tombs a complete blending of the decorative forms in use among Hindu and Jaina sculptors with the main lines of Mohammedan art is generally to be found. The great open quadrangle, the pointed arch the dome the minaret all appear but they are all made out of Indian materials. Perhaps not the least noteworthy feature of mosques and tombs in India is the introduction of perforated slabs of marble in the place of the lar tracery which filled the heads of openings in Cairo or Damascus. These are works of the greatest and most refined beauty sometimes panels of thin marble each pierced with a different pattern, are fitted into a framework prepared for their reception at others we meet with window heads where upon a background of twining stems and leaves there grow up palms or banian trees, their lithe branches and leaves wreathed into lines of admirable grace and every part standing out owing to the fine piercings of the marble as distinctly as a tree

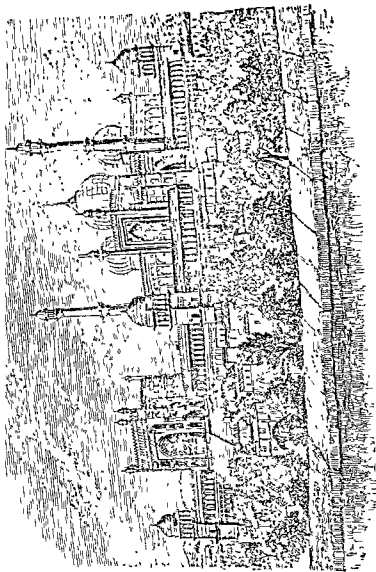


FIG 194.—GRAND MOSQUE AT DELHI, BUILT BY SHAH JEHAN

and surface decoration is very great. Pointed arches occur here almost invariably, and in most cases the outline of the opening is very slightly turned upwards at the apex so as to give a slight increase of emphasis to the summit of the arch. The buildings are not as a rule lofty, and though plain walls and piers occur and contrast well with the arched features, pains have been taken to avoid anything like massive or heavy construction. Great extent, skilful distribution, extreme lightness and admirably combined groupings of the features and masses, are among the fine qualities which lend to Mohammedan architecture in Ahmedabad a rare charm.

The religion and the art of Islam seem destined to live and die together. Nothing (with the one exception of the suggestion of the pointed arch to Western Europe at the very moment when Romanesque art was ripe for a change) has developed itself or appears likely to grow out of Mohammedan architecture in any part of the wide field to which the attention of the reader has been directed, and in this respect the art of the Mohammedan is as exclusive as intolerant and as infertile as his religion. The interest which it must possess in the eyes of a Western student will rise less from its own charms than from the fact that it first employed the pointed arch—that feature from which sprang the glorious series of Western Christian styles to which we give the name of Gothic. This arch indeed, appears to have been discovered by the very beginners of Mohammedan architecture, at a time when the style was still plastic and in course of growth, and the beauty of Saracenic art is due to no small extent to the use of it, but in the employment of this feature the Western architect advanced much further than the Saracen even at his best could go. The pointed architecture of the Middle Ages, with its

INDEX

BAYE aux Dames, Caen 231
 Hommes Caen 230
 bev Westminster 204
 ora 114
 Ambra, 258 263
 Amphitheatre at Arles, 161
 " Nîmes 161
 " Pola, 161
 " Pome (Colonia), 158
 " Sutri, 148
 " Verona, 161
 Chemises of Thralles, *Architect* 211
 Chan Way 145
 Chodorus of Damascus, *Architect*, 155
 Conduci at Nîmes (Pont du Gard) 171
 " from Praeneste to Rome, 145
 " at Pome (Aqua Claudia) 171
 " " (Ano Novus) 111
 " at Segovia, 171
 " at Tarragona, 111
 at Autun (Porte d'Arroux), 172
 " Jerusalem (Golden Gate), 200
 " Rome (of Constantine), 179
 " " (of the Coldsmiths), 138
 " " (of Sept. Severus) 179
 " " (of Titus), 179
 " Têves (Pia Augusta), 172
 " 65
 bek ruins at, 149
 " at Pome (Constantiniana), 155
 " " (Emilia), 151

Basilica at Pome (Julia), 155
 " " (Portia) 154
 " " (Sempronia), 155
 " " (Ulpia), 155
 " Trêves 155
 Basilica-church at Florence (S. Miniato), 203
 " " Pavenna (S. Apollinare in Classe), 206 203
 " " Pome (S. Agnese), 201
 " " Pome (S. Clemente) 199
 " " Rome (S. Paul with out the walls), 205
 " " Rome (S. Pietro), 201
 Baths of Agrippa, 169
 " Caracalla, 169
 " Diocletian, 164 191
 Bharhut 1
 Bersi N. m. 45
 Bridge over the Danube (Trajan's), 100
 " Tagus (Hadrian's), 100
 " Tiber (Pons Sublicus), 100
 Campo Santo Pisa, 209
 Castle of S. Angelo 14
 Cathedral at Canterbury 233
 " Durham, 234

- al at Exeter, 231
 " Monreale, 249
 " Peterborough, 231, 235
 " Piacenza, 224
 " Pisa, 209
 " Rochester, 231
 " Rome (S Peter's), 205
 " Venice (S Mark's), 217
 " Winchester, 231
 atya, 67
 apel in Tower of London, 232, 233
 achil Minar, 56
 oragic Monument of Lysicrates, 112
 urch at Aix la Chapelle, 225
 " Caen (Abb. aux Hommes), 230
 " " (Abb. aux Dames), 231
 " Constantinople (S Sophia), 211
 " Earl's Barton, 224
 " Milan (S Ambrogio), 224
 " Northampton (S Peter's), 231
 " Paris (Madeleine), 185
 " Perigueux (S Front), 218
 " Ravenna (S Vitale), 208, 215
 " Rome (S Maria degli An-
 Gate, Golden, at Jerusalem, 220
 Gate at Perugia, 141
 Giralda, 263
 Hall, S George's, Liverpool, 185
 Ictinus, *Architect*, 88
 Isidoros of Miletus, *Architect*, 211
 Keep at Colchester, 237
 " Hedingham Castle, 239
 " Rochester Castle, 238
 " Tower of London, 237, 239
 Kutub, 266
 Lata, 65
 Lotus Column 32
 Lysicrates, Choragic Monument of, 112
 Maison Carrée, Nîmes, 149
 Mammisi, 25
 Manephtah, 21
 Manetho, 15
 Mastaba, 20
 Mausoleum of Halicarnassus, 110
 Mosque at Ahmedabad 266